REPORT TO CONGRESS

EVALUATION OF THE MUNICIPAL HEALTH SERVICES PROGRAM DEMONSTRATION

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1994

CONTENTS

Chapter **Page**

EXECUTIVE SUMMARY viii

I. INTRODUCTION 1

A. ORIGIN AND GOALS OF THE MHSP DEMONSTRATION . . 1
B. EVOLUTION AND CURRENT STATUS OF THE MHSP 3
C. PREVIOUS EVALUATIONS OF THE MHSP 5
D. OBJECTIVES OF THIS EVALUATION 8

II. DESCRIPTION OF THE MHSP DEMONSTRATION 10

A. THE BALTIMORE MHSP 10

1. Administration and Organization 11
2. Staffing 12
3. Accessibility of Services and Coordination of Care 13
4. Revenue Sources and Financial Status 14
5. Competition With Local Providers 15

B. THE CINCINNATI MHSP 15

1. Administration and Organization 16
2. Staffing 17
3. Accessibility of Services and Coordination of Care 17
4. Revenue Sources and Financial Status 18

C. THE MILWAUKEE MHSP 18

1. Administration and Organization 19
2. Staffing 20
3. Accessibility of Services and Coordination of Care 21
4. Revenue Sources and Financial Status 22

CONTENTS *(continued)*

Chapter **Page**

D. THE SAN JOSE MHSP 22

1. Administration and Organization 23
2. Staffing 24
3. Accessibility of Services and Coordination of Care 24
4. Revenue Sources and Financial Status 25

III. EFFECTS OF THE MHSP ON SERVICE USE AND MEDICARE COSTS 27

A. RESEARCH DESIGN 28

1. Overview of the Methodology 29
2. Beneficiary Samples 30
3. Data Sources 32
4. Data Limitations 33

B. RESULTS 34

1. Use of Services by MHSP Patients 35
2. Descriptive Comparisons of MHSP Users and Nonusers . 44
3. Determining the Effect of the MHSP on Medicare Costs 51
4. Access to Care for MHSP Users and Nonusers 58

IV. QUALITY OF CARE ANALYSIS 65

A. METHODOLOGY 65

1. Selection of MHSP Patients for Review 65
2. Primary Data Collection 66
3. Review Criteria 67
4. Medical Record Review Methodology 69
5. Medicare HMO Comparison Group 70
6. Assessment of Continuity of Care 71

CONTENTS *(continued)*

Chapter **Page**

B. RESULTS 73

1. Case Characteristics 73
2. Quality of Care Findings 73

C. DISCUSSION 79

V. COST PROJECTIONS 80

A. MHSP MEDICARE COST TRENDS 1985-1990 80
B. PROJECTION PROCEDURES 82
C. PROJECTED MHSP MEDICARE COSTS 1991-1993 83
1. Baltimore 83
2. Cincinnati 86
3. Milwaukee 86
4. San Jose 87

VI. SUMMARY 88

REFERENCES 90

TABLES

Table Page

I.1 GROWTH OF MEDICARE MHSP EXPENDITURES, FY1981-FY1990 6

III.1 MEAN COSTS TO MEDICARE FOR MHSP SERVICES IN 1989 . . 36

III.2 COMPARISON OF BENEFICIARIES WHO USED THE MHSP FOR ANCILLARY SERVICES ONLY WITH ALL OTHER MHSP PATIENTS, 1989 (ALL CITIES) 39

III.3 COMPARISON OF DEMOGRAPHIC CHARACTERISTICS OF MHSP USERS AND NONUSERS, 1989 46

III.4 PRIOR SERVICE USE AND COST FOR NEW USERS OF MHSP PHYSICIAN SERVICES IN 1989 AND MHSP NONUSERS WITH POSITIVE MEDICARE PAYMENTS IN 1989 50

III.5 REGRESSION-ADJUSTED DIFFERENCES BETWEEN USERS OF MHSP PHYSICIAN SERVICES AND MHSP NONUSERS IN MEAN MEDICARE EXPENDITURES AND HOSPITAL ADMISSION RATES, 1989 55

III.6 REGRESSION-ADJUSTED DIFFERENCES BETWEEN USERS OF THE MHSP FOR ANCILLARY SERVICES ONLY AND MHSP NONUSERS IN MEAN MEDICARE EXPENDITURES AND HOSPITAL ADMISSION RATES, 1989 56

III.7 REGRESSION-ADJUSTED COMPARISONS OF PHYSICIAN VISIT RATES FOR USERS OF MHSP PHYSICIAN SERVICES AND MHSP NONUSERS, 1989 61

III.8 UNADJUSTED PRE/POST COMPARISONS OF PHYSICIAN VISIT RATES FOR NEW USERS OF MHSP PHYSICIAN SERVICES IN 1989 AND MHSP NONUSERS WITH POSITIVE MEDICARE PAYMENTS IN 1989 (BALTIMORE) 63

TABLES *(continued)*

IV.1 OVERVIEW OF MHSP SERVICES USED IN 1989 BY MHSP PATIENTS IN THE SAMPLE FOR THE QUALITY OF CARE ANALYSIS 74

IV.2 QUALITY OF CARE PROBLEM RATES IN THE MHSP COMPARED WITH A NATIONAL SAMPLE OF MEDICARE HMO ENROLLEES 75

IV.3 PERCENTAGE DISTRIBUTION OF QUALITY OF CARE PROBLEMS IN THE MHSP BY TYPE OF PROBLEM 77

FIGURES

Figure **Page**

V.1 ACTUAL AND PROJECTED MHSP MEDICARE EXPENDITURES, ALL CITIES 84

V.2 ACTUAL AND PROJECTED MHSP MEDICARE EXPENDITURES, BY CITY 85

EXECUTIVE SUMMARY

The Municipal Health Services Program (MHSP) demonstration was implemented in 1978 as an effort to improve access to health care in medically underserved urban areas. The objective was to help cities build upon their existing public health resources to develop or strengthen networks of community clinics to provide primary and preventive health care services to the inner-city poor. The program was established in five cities with funding from the Robert Wood Johnson Foundation and was supported by Medicare and Medicaid waivers from the Health Care Financing Administration (HCFA). Foundation support ended in 1984, but HCFA has continued to grant the Medicare waivers in four of the cities, under Congressional mandates. The program has thus evolved into a demonstration limited to Medicare beneficiaries. The four cities participating in the demonstration are Baltimore, Maryland; Cincinnati, Ohio; Milwaukee, Wisconsin; and San Jose, California.

The Omnibus Budget Reconciliation Act (OBRA) of 1989 extended the MHSP Medicare waiver through December 1993 and required the Secretary of Health and Human Services to "submit a report to Congress on the waiver program with respect to the quality of health care, beneficiary costs, and such other factors as may be appropriate." HCFA contracted with Mathematica Policy Research, Inc., and its subcontractor, SysteMetrics, to conduct an evaluation of the MHSP demonstration. This report summarizes the findings of that evaluation. The findings are described in greater detail in Nelson et al. (1993). OBRA 93, P.L. 103-66, again extended the MHSP Medicare waiver through December 31, 1997.

A. BACKGROUND

The Medicare waivers granted under the MHSP demonstration eliminated the Part B deductible and coinsurance for services provided at MHSP clinics, expanded the range of services covered at the clinics, and provided for full reimbursement of the reasonable costs of MHSP services. The expanded benefits covered under the Medicare waiver include preventive care, prescription drugs, dental care, dentures, podiatry, optometry, eyeglasses, and a variety of other services. Except for eyeglasses, which have a 50 percent coinsurance rate, these services are available to Medicare beneficiaries free of charge. Eligibility for MHSP services is not contingent upon income. Medicare beneficiaries who use MHSP clinics are permitted to obtain care outside the clinics, but are subject to the standard Medicare Part B deductible and coinsurance when they do so.

In 1990, the total cost to Medicare for services provided under the demonstration was $34.8 million. Only $5.4 million (15 percent) was for routine physician services; the remaining $29.4 million (85 percent) was for ancillary services consisting of:

- pharmacy services: $11.9 million (35 percent);
- dental services and dentures: $9.8 million (28 percent); and
- other services such as podiatry and optometry: $7.7 million (22 percent).

The composition of Medicare costs for MHSP services has changed dramatically since the early years of the program, as costs for pharmacy, dental, and other ancillary services have grown faster than costs for routine physician services throughout the 1980s. The mix of primary physician services has decreased from 34 percent in 1981 to 15 percent in 1990, while that of ancillary services has increased from 66 percent in 1981 to 85 percent in 1990.

B. EVALUATION OBJECTIVES AND RESEARCH DESIGN

This evaluation had four objectives: (1) to document the organization and operations of the MHSP demonstration in each city; (2) to assess the effects of the demonstration on service use and Medicare costs; (3) to determine whether the MHSP clinics are providing care of acceptable quality; and (4) to project Medicare MHSP costs through the end of the demonstration.

To document the organization and operations of the demonstration in each city, we conducted in-depth case studies based on information collected through on-site interviews with relevant program staff in each city and a review of quantitative program data, including MHSP cost reports. We assessed the effects of the demonstration on service use and Medicare costs by comparing the use and cost experience of MHSP patients with that of a matched comparison group of beneficiaries who did not use the MHSP clinics. The comparison group was selected from the service areas of the MHSP clinics to help achieve comparability between the two groups in socioeconomic status, the availability of health care providers, prevailing health care prices, and local practice patterns. Within each city, comparison-group beneficiaries were selected such that they had the same racial composition as MHSP patients. We also used statistical methods to control for differences between the two groups in demographic characteristics and other factors associated with the need for care. The analysis used data from the Medicare enrollment file, MHSP claims and cost reports, and claims submitted under the regular Medicare program.

Our assessment of the quality of care provided by MHSP clinics was based on a review of the medical records of a sample of MHSP patients. The approach we developed was to evaluate the process of care at MHSP clinics to determine whether it meets established clinical standards. The criteria developed for the medical record review included an assessment of drug prescribing and monitoring activity, the general aspects of patient care, and care for four chronic conditions. Specially-trained registered nurses reviewed each record to identify potential quality of care problems, and cases with potential problems were referred to primary care physicians for a final review. To provide a context for interpreting the findings, they were compared with the findings from a similar review of the process of care provided to a national sample of Medicare health maintenance organization (HMO) enrollees.

The projections of future Medicare costs under the MHSP demonstration were based on previous trends in Medicare costs for each service offered under the demonstration as determined from MHSP cost reports submitted to HCFA. Information from the case studies was also used to develop an assessment of whether previous trends were likely to continue in the future.

C. FINDINGS

The four cities have developed distinctive programs which differ significantly in organization, scale, and character. In 1990, Medicare expenditures for MHSP services were $22.7 million in Baltimore, $7.4 million in San Jose, $3.5 million in Milwaukee, and $1.3 million in Cincinnati. Five MHSP clinics operate in Baltimore, while San Jose has four clinics, Cincinnati three clinics, and Milwaukee two clinics. At least one of the MHSP clinics in each city is a federally-funded Community Health Center which receives funding from the U.S. Public Health Service.

In each year during the 1987-89 study period, approximately 39 percent of MHSP patients used the MHSP for ancillary services only. In 1989, beneficiaries who used the MHSP for ancillary services only accounted for 18.6 percent of the total Medicare cost in the demonstration; the average cost of MHSP services provided to such beneficiaries was $469, of which $364--or 78 percent--was for dental services and dentures. Most of the beneficiaries who use the MHSP for ancillary services only are obtaining physician services elsewhere and appear to have had no prior relationship with MHSP physicians. This suggests that the demonstration may not be effectively targeted to low-income beneficiaries who do not have access to primary medical care.

Among beneficiaries who did use MHSP physician services in 1989, the average cost to Medicare of the MHSP services provided was $1,313, of which 22 percent was for routine physician services; 44 percent of their MHSP cost was for pharmacy services; and 14 percent was for dental services and dentures. Beneficiaries who use MHSP physician services also obtain substantial amounts of care from non-MHSP physicians. Beneficiaries who began using MHSP physician services during the study period had not been obtaining significant amounts of care from hospital emergency rooms and outpatient departments in the previous year. Visits to physicians at hospital emergency rooms and outpatient departments, in fact, increased from 1988 to 1989 relative to other Medicare beneficiaries.

Based on a comparison-group experimental design, the evaluator's best estimates are that in 1989, the demonstration increased Medicare expenditures by $440 per beneficiary among MHSP patients who used MHSP physician services and by $500 per beneficiary among those who used the MHSP for ancillary services only. These amounts correspond to increases of 10 percent and 15 percent, respectively, in Medicare expenditures for the two segments of the MHSP patient population. The average cost to Medicare of the services provided under the demonstrations in 1989 was $984 per beneficiary (see Table III.1). Thus, in 1989 each dollar spent by the Medicare program on MHSP services resulted in a net increase in total Medicare program expenditures of approximately 47 cents ($463 divided by $984). In 1989 the total cost to Medicare of all services provided under the demonstration was $30.052 million. Our estimates thus indicate that in 1989 the MHSP demonstration resulted in a net increase in Medicare program expenditures of $14.124 million. To project these findings forward to 1993, we assume that the average cost of MHSP services per beneficiary increased from 1989 to 1993 at the same rate as the average cost of regular (non-MHSP) Medicare services. Applying this ratio of .47 to project Medicare cost of MHSP services in 1993 ($46.148 million), we estimate that the MHSP demonstration will result in a net increase in total Medicare expenditures in 1993 of $21.690 million.

The review of medical records obtained from MHSP clinics found one or more quality of care problems in 37 percent of the cases reviewed. Eight percent of the problem cases were classified as severity level 1, representing medical mismanagement without the potential for significant adverse effects on patients, while 92 percent were classified as severity level 2, representing medical mismanagement with the potential for significant adverse effects. No problems were classified as severity level 3--that is, major problems with observable, significant adverse impacts on patients. The rate of quality of care problems among MHSP patients was significantly higher than the rate found for the comparison sample of Medicare HMO enrollees.

It is important to note that these findings reflect only information about the process of care that is evident in medical records maintained by the sites. To some extent, apparent quality problems are likely to be attributable to incomplete documentation in the medical record or differences in medical judgement among clinicians, or may not be indicative of the overall process of care for clients who received some services outside the MHSP clinics. Also, as an assessment of the process of care, measures of actual health outcomes or patient satisfaction are not reflected in the findings. Detailed documentation on each apparent quality problem will be shared with the MHSP sites, so they can assess the actual extent of quality concerns and develop corrective actions where necessary.

I. INTRODUCTION

A. ORIGIN AND GOALS OF THE MHSP DEMONSTRATION

The Municipal Health Services Program (MHSP) was established in 1978 in five cities to improve access to ambulatory health care in medically underserved urban areas by creating or expanding networks of community clinics. The program sought to expand the provision of primary and preventive health care services to the urban poor and to substitute MHSP clinics for hospital emergency rooms and outpatient departments as a source of primary care. It was hoped that these changes would not only improve the health of inner city residents but also reduce health care costs. The demonstration was originally funded by grants from the Robert Wood Johnson Foundation (RWJF) and co-sponsored by the U.S. Conference of Mayors and the American Medical Association and was supported by Medicare and Medicaid waivers granted by the Health Care Financing Administration (HCFA). RWJF funding ceased in 1984, but HCFA has continued to grant the Medicare waivers in four of the cities, under congressional mandates.

The nation's 50 largest cities were invited to submit proposals to participate in the MHSP demonstration, and in June 1978 five were selected: Baltimore, Maryland: Cincinnati, Ohio; Milwaukee, Wisconsin; St. Louis, Missouri; and San Jose, California. The selection of cities was based primarily on an assessment of the feasibility and likely success of their proposals to build on their public health care delivery systems to expand access to ambulatory care among the inner city poor (Ginzberg et al., 1985). Beginning in 1978, RWJF provided $3 million in grants to each city over 5 years.

In 1979, HCFA supported the MHSP by granting waivers of Medicare and Medicaid regulations governing benefit coverage and reimbursement methods. The Medicare waivers eliminated the Part B deductible and coinsurance for services provided at MHSP clinics, expanded the range of Part B services covered at the clinics, and provided full reimbursement for the reasonable costs of MHSP services. The expanded benefits covered under the Medicare waiver included preventive care, prescription drugs, dental services, dentures, podiatry, optometry, eyeglasses, and various other services. Except for eyeglasses, which have a 50 percent coinsurance rate, these services are available to Medicare beneficiaries free of charge. To obtain services from MHSP clinics, Medicare beneficiaries are required to be city residents enrolled in Medicare Part B. Eligibility for MHSP services is not contingent upon income. Medicare beneficiaries who use the MHSP clinics are permitted to obtain care outside the clinics but are subject to the standard Part B deductible and coinsurance when they do so.

The waiver of Medicaid regulations authorized by HCFA permitted State Medicaid programs to pay for services at MHSP clinics on a reasonable cost basis and to cover additional services at the clinics. Four of the five States submitted Medicaid waiver requests to HCFA, and these were subsequently approved.

B. EVOLUTION AND CURRENT STATUS OF THE MHSP

RWJF's participation in the MHSP demonstration ended in 1984. The Medicare waivers were scheduled to end in December 1984, but HCFA agreed to a 1-year extension in response to a request from the U.S. Conference of Mayors. As a condition for granting this extension, HCFA required the cities to submit proposals to convert the MHSP to a capitated, risk-based reimbursement system for Medicare Parts A and B by January 1986. HCFA required that these proposals comply with the requirements for Medicare health maintenance organizations (HMOs) contained in the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA). All cities except St. Louis submitted proposals in 1984 but later requested that HCFA waive the TEFRA "50/50 requirement" that Medicare and Medicaid enrollees constitute no more than 50 percent of an HMO's total enrollment. HCFA refused that request, having taken a firm policy decision against granting such exceptions following the Medicare HMO demonstrations in the early 1980s.[1]

Congress included a provision in P.L. 99-190 that extended the Medicare waiver through December 1986. This extension maintained the original cost-based reimbursement system for the MHSP and did not require conversion to capitation. Congress subsequently included a provision in P.L. 99-272 extending the Medicare waiver through December 1989, and the Omnibus Budget Reconciliation Act (OBRA) of 1989 extended the waiver through December 1993. OBRA 89 also required the Secretary of Health and Human

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[1] The TEFRA 50/50 requirement is intended to help ensure that Medicare HMOs meet acceptable standards for quality of care by limiting participation in the Medicare market to HMOs that have attracted significant numbers of enrollees in the private pay market.

Services to "submit a report to Congress on the waiver program with respect to the quality of health care, beneficiary costs, and such other factors as may be appropriate." OBRA 93, P.L. 103-66, again extended the MHSP Medicare waiver through December 31, 1997.

The removal of RWJF funding in 1984 and subsequent extensions of the Medicare waiver have transformed the MHSP into a Medicare-only demonstration. The program was originally designed to help the cities expand access to primary and preventive health care services to inner city residents of all ages, and in the early years of the program, MHSP clinics focused on providing care to children (Fleming et al., 1986). As the MHSP has evolved into a Medicare-only demonstration, however, the participating clinics in some cities have shifted their focus toward the Medicare population. In 1990, Medicare beneficiaries accounted for 73 percent of all visits to MHSP clinics in Baltimore, 51 percent of all visits in Milwaukee, 35 percent of all visits in San Jose, and 24 percent of all visits in Cincinnati.

There are currently 14 MHSP clinics: 5 in Baltimore, 4 in San Jose, 3 in Cincinnati, and 2 in Milwaukee. The scale of the demonstration varies significantly across cities. In 1990, the total Medicare expenditure for MHSP services was $34.82 million, of which $22.73 million (or 65.3 percent) went to Baltimore, $7.35 million (21.1 percent) went to San Jose, $3.45 million (9.9 percent) went to Milwaukee, and $1.29 million (3.7 percent) went to Cincinnati. These differences across cities in Medicare expenditures reflect differences across cities in the number of Medicare patients served by the MHSP, as well as differences in service volume and the range of services offered.

The composition of Medicare expenditures for MHSP services has changed significantly since the early years of the program. In 1981, total Medicare expenditures for MHSP services were about $2.25 million, of which 34 percent was for routine care, 30 percent was for dental care, 12 percent was for pharmacy services, and 25 percent was for other ancillary services (see Table I.1).[2] Since that time, expenditures for pharmacy, dental, and other ancillary services have each grown faster than expenditures for routine care. Pharmacy services have exhibited the fastest growth in expenditures, increasing at an average annual rate of 67 percent between 1981 and 1985 and an average annual rate of 23 percent between 1985 and 1990. Consequently, in 1990 pharmacy services accounted for a higher share of total Medicare MHSP expenditures than any other service. Of the $34.82 million in Medicare MHSP expenditures in 1990, 34 percent was for pharmacy services, 28 percent for dental services, 22 percent for other ancillary services, and 15 percent for routine care.

C. PREVIOUS EVALUATIONS OF THE MHSP

Previous evaluations of the MHSP focused on the experience of the demonstration in the early 1980s--before it was transformed into a Medicare-only demonstration. Researchers at Columbia University documented the implementation of the MHSP in

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[2] Routine care includes the services provided by physicians and physician extenders but does not include such ancillary services as laboratory or radiology.

TABLE I.1

GROWTH OF MEDICARE MHSP EXPENDITURES, FY 1981 - FY 1990

	Medicare MHSP Expenditures[1]			Annualized Percent Change[4]	
	FY 1981[2]	FY 1985	FY 1990[3]	FY81-FY85	FY85-FY90
Total Expenditures					
Baltimore	$488,691	$8,735,462	$22,728,735	72.1 %	19.1 %
Cincinnati	75,542	681,050	1,286,024	55.0	12.7
Milwaukee	531,204	2,124,475	3,454,059	34.7	9.7
San Jose	1,153,338	3,045,332	7,354,165	24.3	17.6
Total	2,248,775	14,586,319	34,822,983	46.7	17.4
Routine Care[5]					
Baltimore	201,164	2,228,713	2,630,787	60.1	3.3
Cincinnati	51,077	219,206	394,329	36.4	11.7
Milwaukee	242,905	422,414	636,594	13.8	8.2
San Jose	278,223	809,799	1,707,579	26.7	14.9
Total	773,369	3,680,132	5,369,289	39.0	7.6
Pharmacy Services					
Baltimore	73,046	1,944,654	8,042,933	82.0	28.4
Cincinnati	20,856	206,912	415,187	57.4	13.9
Milwaukee	37,645	786,253	1,273,583	76.0	9.6
San Jose	128,635	780,313	2,217,617	45.1	20.9
Total	260,182	3,718,132	11,949,320	66.5	23.3
Dental and Denture Services					
Baltimore	95,408	2,703,442	6,787,303	83.6	18.4
Cincinnati	748	149,942	286,480	132.5	12.9
Milwaukee	120,971	476,403	547,431	34.3	2.8
San Jose	446,610	873,459	2,227,376	16.8	18.7
Total	663,737	4,203,246	9,848,590	46.1	17.0
All Other Services					
Baltimore	119,073	1,858,653	5,166,096	68.7	20.4
Cincinnati	2,861	104,990	272,187	90.1	19.1
Milwaukee	129,683	439,405	1,074,788	30.5	17.9
San Jose	299,870	581,761	1,067,788	16.6	12.1
Total	551,487	2,984,809	7,580,859	42.2	18.6

SOURCE: MHSP Medicare Cost Reports as of October 7, 1992.

[1] Excludes St. Louis, which left the program in FY 1985. St. Louis expenditures were $450,796 in FY 1981 and $769,521 in FY 1985. All figures are unadjusted for inflation.

[2] Expenditure data from FY 1979 and FY 1980 were excluded because expenditures were relatively small, making rates of change from those years so high as to be of limited value. Total expenditures, excluding St. Louis, were $46,213 in FY 1979 and $1,038,607 in FY 1980.

[3] FY 1990 cost reports have not been settled.

[4] Represents an average annual compounded rate of growth

[5] Routine care includes services provided by physicians and physician extenders, but does not include laboratory, radiology, pharmacy, or other services.

each city and examined the political, institutional, and economic factors that affected program implementation and operation (Ginzberg et al., 1985). Researchers at the Center for Health Administration Studies (CHAS) at the University of Chicago conducted a second evaluation, which assessed the effects of the program on access to care and the costs of care (Fleming and Andersen, 1986; Fleming et al., 1987).

The CHAS evaluation included two separate analyses of the effects of the MHSP demonstration on Medicare costs--each using data from the early 1980s. The first analysis, based on survey data, found that the MHSP had no statistically significant effect on health care costs for the general population of MHSP patients or on MHSP Medicaid patients but found that the MHSP reduced costs for MHSP Medicare patients. That analysis was limited, however, to a very small sample of Medicare MHSP patients--only 192 beneficiaries across the five cities.[3] A second analysis, based on Medicare claims data, used a larger sample and concluded that the MHSP reduced Medicare costs for MHSP patients by an average of 33 percent across the five cities--primarily through a reduction in costs for inpatient hospital care.

Both of the CHAS analyses were based on a nonexperimental design in which demonstration impacts were estimated by comparing the Medicare costs of MHSP patients with those of a comparison group that had received services from non-MHSP providers.

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[3] The small number of Medicare beneficiaries in the survey sample used in this study reflected the relatively small proportion of Medicare beneficiaries in the MHSP patient population in the early years of the demonstration.

There were significant differences between MHSP patients and the comparison group on demographic characteristics and prior Medicare costs which strongly suggested that MHSP patients would have had significantly lower average costs than the comparison group even in the absence of the demonstration. The authors attempted to control for such differences statistically, but we cannot be certain that those efforts were entirely successful. If they were not, the estimates generated by the study overstate the true cost-effectiveness of the MHSP demonstration.

Evaluating the effects of the MHSP demonstration on Medicare costs based on more recent experience is important for several reasons. First, the number of Medicare beneficiaries using MHSP clinics has increased significantly since the early 1980s, and the mix of patients may have changed also. Second, the composition of Medicare MHSP expenditures has changed significantly since the initial years of the demonstration, with pharmacy and dental costs now constituting about 62 percent of the total. This may have changed the cost-effectiveness of the demonstration for Medicare and may have affected the demonstration's ability to provide coordinated preventive and primary care to beneficiaries.

D. OBJECTIVES OF THIS EVALUATION

This evaluation has four objectives:

- to document the organization and operations of the MHSP in each city;
- to evaluate the effects of the demonstration on service use and Medicare costs;

- to determine whether the MHSP clinics are providing care of acceptable quality; and
- to develop projections of future Medicare costs under the demonstration.

The following four chapters present our findings on these four issues, and the final chapter presents our conclusions.

II. DESCRIPTION OF THE MHSP DEMONSTRATION

This chapter describes the organization and operations of the MHSP demonstration in each city. The information summarized in this chapter is derived from in-depth case studies which are documented in greater detail in Wright et al. (1992). The case studies were based on information gathered through a series of 3- or 4-day site visits to each city during the first quarter of 1991. During each site visit, two-person research teams conducted interviews with the city MHSP administrators; clinic administrators, medical directors, and providers; and local hospital administrators. In addition, telephone interviews were conducted with representatives of local medical societies and the Health Resources and Services Administration (HRSA), which provides limited funding to half of the MHSP clinics under the Federal Community Health Center (CHC) program. In total, 89 persons were interviewed.

The description of the MHSP demonstration in each city contained in the case studies and summarized in this chapter is based on information reported by the persons we interviewed and reflects the status of the demonstration at the time of the site visits. Some details may have changed since that time, but the basic description in this chapter of the organization and operations of the demonstration in each city remains valid.

A. THE BALTIMORE MHSP

The Baltimore MHSP is a much larger program than the MHSP in the other three cities, accounting for about 65 percent of all Medicare MHSP reimbursements in 1990.

The program is highly visible in the community. Medicare beneficiaries constitute a significantly higher proportion of the patient load of the MHSP clinics in Baltimore than of the MHSP clinics in the other cities.

1. Administration and Organization

The Baltimore MHSP is administered by the City Health Department. The role of MHSP Administrator within the Health Department is filled by the Assistant Commissioner for Nursing and Community Services. Five MHSP clinics operate in Baltimore. The largest, Washington Village Community Health Center, is a wholly-owned subsidiary of the Bon Secours Baltimore Health Corporation, which is part of an organization known as the Sisters of Bon Secours, an international community of Catholic women that owns and operates health care facilities throughout the United States. The four other MHSP clinics are part of Baltimore Medical Systems, Inc. (BMSI), a large CHC which receives funding from HRSA under section 330 of the Public Health Service Act. BMSI also operates a fifth health center in Baltimore, which is not in the MHSP demonstration.

The MHSP operates under contracts between the city and the two organizations which operate the clinics--Bon Secours Hospital and BMSI. The latter two organizations have in turn negotiated numerous subcontracts for specialized services provided at the MHSP clinics, including pharmacy, dentistry, optometry, radiology, and podiatry. The city

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[1] The four BMSI clinics participating in the MHSP demonstration are the Albert Witzke Medical Center, the Brehms Lane Medical Center, the Hollander Ridge Health Center. and the Matilda Koval Medical Center.

acts primarily as a fiscal agent for demonstration funding and exercises little direct control over clinic operations. Earlier in the demonstration, the city owned the clinics and worked in cooperation with community advisory groups in developing the mix of services that are currently provided.

2. Staffing

The five Baltimore MHSP clinics vary in their staffing levels and stability. Washington Village has four full-time and four part-time primary care physicians, for a total of 6.0 full-time equivalents (FTEs). The clinic's staff over time has been very stable; four of the primary care physicians and a physician's assistant have worked at the clinic since before 1985. Other health professionals at Washington Village include dentists (7.5 FTEs), nurses (2.8 FTE), podiatrists (2.0 FTEs), a pharmacist (1.0 FTE), a physician's assistant (1.0 FTE), and an optometrist (0.8 FTE). Other medical specialists, including an otolaryngologist, gastroenterologist, general surgeon, and vascular surgeon are available to Medicare beneficiaries who visit the clinic.

Most physicians at the BMSI clinics work part-time; only Matilda Koval and Brehms Lane have full-time primary care physicians. Collectively, the four BMSI clinics participating in the MHSP have 13.7 FTE primary care physicians. Other health professionals include nurses (15.6 FTE), dentists (8.8 FTE), pharmacists (7.0 FTE), podiatrists (3.6 FTE), and physician assistants (3.5 FTE). An expanded medical specialty service at Albert Witzke includes an ophthalmologist, urologist, cardiologist, neurologist, orthopedist, and plastic surgeon. The BMSI clinics have experienced more staff instability and recruitment problems than Washington Village.

3. Accessibility of Services and Coordination of Care

All clinics are open from 8:00 a.m. (or 8:30 a.m.) until 5:00 p.m. Monday through Friday, four of the clinics are open some evenings, and two are open for approximately half a day on Saturday. Washington Village and two of the BMSI clinics have lengthy waiting lists for new patients (lasting several months). For existing patients, same-day appointments are available at all clinics for acute problems. Each clinic is staffed by a triage nurse who screens patient requests and confers with a primary care physician in scheduling appointments. Clinic physicians are also available to handle after-hours emergencies.

New patients select (or are assigned to) primary care physicians who provide medical care services and referrals when necessary. It was reported to us that pharmacy, radiology, and laboratory services can be accessed only through the primary care physician. Other ancillary services, such as podiatry, dental, optometry, and mental health, can be accessed directly by patients. The MHSP pharmacies maintain a computer system that monitors prescriptions for each patient and indicates possible drug interactions. The pharmacies have a policy of not refilling prescriptions that are over a year old to ensure that patients have regular contact with their primary care physicians.

4. Revenue Sources and Financial Status

The MHSP clinics in Baltimore receive a higher proportion of their revenues from Medicare than the MHSP clinics in the other three cities. About 95 percent of the medical visits to Washington Village are by Medicare beneficiaries, and Medicare accounts for about 95 percent of the clinic's total revenues. Other revenue sources for Washington Village include Medicaid, private pay under a sliding scale, and commercial insurance.

Medicare accounts for 72.3 percent of the revenues of the BMSI clinics. Other revenue sources include Medicaid (9.0 percent), an HMO contract (10.9 percent), self-pay and private insurance (4.4 percent), and grants, including section 330 funds from HRSA (3.4 percent). Medicare beneficiaries account for nearly all the medical visits at one of the BMSI clinics, while Medicare beneficiaries' share of the visits at the other three clinics is 30 percent, 58 percent, and 88 percent, respectively.

Washington Village is financially stable, but the BMSI clinics have experienced significant financial difficulty in the past. According to interviews with BMSI staff, the financial problems at BMSI have resulted in part from retrospective adjustments by HCFA of costs initially claimed under the MHSP demonstration. These included retrospective adjustments for Medicare patients found on an audit not to be city residents and for dental care charged on the basis of a fee schedule rather than costs.[2]

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[2] Beneficiaries who receive services at MHSP clinics under the Medicare waiver are required to be city residents.

5. Competition With Local Providers

A number of health care professionals in Baltimore, including physicians, dentists, podiatrists, and pharmacists, have organized to complain that MHSP clinics have an unfair competitive advantage and have significantly eroded their Medicare patient volume. Seventy-six such providers petitioned the mayor with their complaints. Their primary complaint is that, by being able to offer free care to all city Medicare beneficiaries regardless of income, the MHSP demonstration has made it difficult for other community providers to attract and retain Medicare patients. In 1990, the Baltimore City Medical Society wrote a letter to the HCFA Administrator expressing the same complaint and urging that the demonstration rules be changed to ensure that MHSP services are targeted to individuals in financial need.[3] These complaints suggest that the Baltimore MHSP is not effectively targeted to individuals without access to other health care providers.

B. THE CINCINNATI MHSP

The Cincinnati MHSP is the smallest of the four programs, accounting in 1990 for only about 4 percent of all Medicare MHSP expenditures. The MHSP in Cincinnati has been integrated into a network of clinics that provide health care to low income residents of all ages. The MHSP has little visibility within the community as a distinct program but is treated as an additional funding source by the participating clinics.

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[3] The medical societies in the other three cities have not expressed similar complaints about the MHSP--presumably because the MHSP in those cities serves a much smaller percentage of the local Medicare population.

1. Administration and Organization

The Cincinnati MHSP is administered by the Assistant Commissioner for Primary Health Care in the City Health Department. Two of the three clinics participating in the MHSP (Northside Health Center and Braxton Cann Health Center) are part of a network of six clinics operated by the City Health Department. The third MHSP clinic (Winton Hills Health Center) is one of six independent, federally-funded CHCs whose operations are coordinated by the Cincinnati Health Network. The latter acts primarily as a fiscal intermediary for section 330 funding from HRSA. The Cincinnati Health Department does not directly supervise operations at Winton Hills but acts as the fiscal agent for MHSP funds from Medicare. A board of directors oversees operations at Winton Hills.

The MHSP clinics in Cincinnati operate primarily on a staff model in which services are provided by salaried employees. At the two Health Department clinics, the only nonsalaried, contracted services are obstetrics, a specialized laboratory, and a van to transport patients. Pharmacy, general laboratory, and dentistry--which are often contracted services in other MHSP cities--are operated directly by the city. Winton Hills uses the same structure, except for a contract for the facility pharmacy.

Operations at the six Health Department clinics and the six independent CHCs are closely coordinated, because the city used to manage most of the CHCs. The 12 clinics share the same computer and billing systems, use a common purchasing system, and use the same quality assurance protocols. Among the demonstration cities, Cincinnati stands out as having highly integrated control of the delivery of primary care to low income citizens.

2. Staffing

The staffing patterns at all three MHSP clinics reflect the strategy of concentrating on basic primary care services. There are few specialists other than obstetricians. Patients requiring specialized care are referred to a large Health Department clinic which is not part of the MHSP. Staffing levels of primary care physicians at the each of the three MHSP clinics are in the range of 2 to 3 FTEs, and staffing levels for nurses range from 4.8 to 8.5 FTEs. Each clinic has between 1 and 2 FTE pharmacists. Northside has 2.1 FTE dentists and Winton Hills 0.75 FTE dentist, while Braxton Cann does not offer dental care. None of the clinics use nurse practitioners or physician assistants, due to practice restrictions mandated by Ohio law.

3. Accessibility of Services and Coordination of Care

The MHSP clinics are generally open from 8 a.m. to 5 p.m., Monday through Friday, with evening hours on Monday at all three clinics and on Thursday at Winton Hills. None of the clinics is open during the weekend for medical services, but Northside provides dental services on Saturday. Same-day appointments are available for acute problems in all clinics; triage is handled by a nurse with referral to a physician, as necessary. Each clinic has a waiting list of residents wanting to become new patients. The waiting list is about 4 months at Northside, 6 weeks at Braxton Cann, and 5 days or less at Winton Hills.

At all clinics, a primary care physician is either selected by, or assigned to, each patient. This physician is responsible for coordinating the care provided to the patient.

including referrals to an appropriate clinic or outside specialty services. Patients obtain access to laboratory, radiology, and pharmacy services only through their primary care physician but have direct access to such other services as dentistry and optometry.

4. Revenue Sources and Financial Status

Medicare patients account for less than a quarter of the primary care visits to the three MHSP clinics, and reimbursements from Medicare account for a quarter or less of total budget of each clinic. Funds from the city government provide between two-thirds and three-quarters of the budget for the two Health Department clinics. Other funding sources for these two clinics include Medicaid, self-pay patients, and private insurance. Winton Hills has a more diversified revenue base than the two Health Department clinics, with Federal CHC funding and Medicaid each accounting for about a quarter of its revenues.

The two Health Department clinics appear to be adequately funded at their present level of operations. The facilities' equipment needs upgrading, however, and administrators agree that the Braxton Cann facility is outdated and needs replacing. Winton Hills has experienced significant financial difficulties in the past and has received a special appropriation from the city council.

C. THE MILWAUKEE MHSP

The Milwaukee MHSP is the second smallest of the four programs, accounting in 1990 for about 10 percent of all Medicare MHSP reimbursements. The MHSP clinics in Milwaukee are housed in city-owned buildings where other health and social services are delivered. The MHSP in Milwaukee has suffered significant organizational instability and financial problems.

1. Administration and Organization

The Milwaukee MHSP is administered by the City Health Department. The MHSP Director within the Health Department reports to the Assistant Commissioner of Health for Budget and Facilities. Two MHSP clinics are currently operational in Milwaukee (Johnston Community Center and Isaac Coggs Health Center). A third MHSP clinic (Capitol Drive Community Health Center) closed in 1990 due to financial problems. The City Health Department owns and maintains the two buildings housing the remaining MHSP clinics and acts as fiscal intermediary for MHSP reimbursements from Medicare. The Health Department does not supervise day-to-day operations at the MHSP clinics, however. The buildings that house the MHSP clinics also contain offices of the county's department of social services, the city's public health and prevention program, a mental health clinic, a day care center, and a clinic for the Women, Infants, and Children nutrition program.

At each clinic, the Health Department has negotiated contracts with a provider of primary care services and three other prime contractors who provide dental, optometry, and physical therapy services. These contracts provide for both the leasing of the city-owned space and the provision of services. The primary care contractor at each clinic has negotiated subcontracts for such services as laboratory, radiology, and pharmacy. There are no overall clinic administrators, only separate administrators for each of the prime contractors. Each prime contractor has its own medical record system, its own billing system, and its own clerical staff.

Since 1985, the provision of primary care services at Isaac Coggs has been plagued by numerous changes in contractors. The most recent change occurred in 1990, with the replacement of a primary care contractor that had been a federally-funded CHC. That organization had its Federal CHC funding terminated in 1990 and later declared bankruptcy. The primary care contact at Isaac Coggs was then awarded to a newly formed nonprofit organization that applied for and received designation as a federally-funded CHC. This new organization resumed primary care at Isaac Coggs with a new director and new physicians.

The contract for primary care at Johnston has also changed recently. From 1986 to 1989, primary care at Johnston was delivered by a private physician group operating under subcontract to a community hospital. That arrangement ended, however, when the physician group experienced significant financial difficulties. The hospital assumed direct responsibility for the provision of primary care at Johnston in 1989.

2. Staffing

Staffing patterns at both Milwaukee MHSP clinics have been unstable in recent years due to the changes in primary care contractors. Even after the most recent change in contractors, both clinics have had considerable difficulty retaining full-time physician staff. The staff at Isaac Coggs includes 5.6 FTE primary care physicians, 3.0 FTE nurses, and 0.6 FTE optometrist. Except for an obstetrician-gynecologist who works at the clinic part-time (0.05 FTE), the clinic has no medical specialists. The staff at Johnston includes 3.0 FTE primary care physicians, 1.8 FTE nurses, and 1.0 FTE optometrist. A psychiatrist, dermatologist, oncologist, and obstetrician-gynecologist are each available at the clinic on a limited basis (0.2 FTE or less for each). Dental services at each clinic are provided through a contract with the Marquette University School of Dentistry. The dental staff at the two clinics ranges from 2 to 3 FTEs in addition to numerous dental students.

3. Accessibility of Services and Coordination of Care

Johnston is open from 8:30 a.m. to 5:00 p.m. Monday through Friday, and Isaac Coggs is open from 9:00 a.m. to 4:30 p.m. Monday through Friday. A triage system run by members of the nursing staff is used for scheduling appointments; same-day appointments are available for current patients. New patients at Johnston have a 3-week wait for an initial appointment, while Isaac Coggs' patients have a 3- to 4-week wait.

When new patients enter the clinics, they are provided with a history form, and a physical assessment is performed. At both clinics, the patient is assigned a primary care physician who is responsible for ongoing care and referrals to appropriate clinic or specialty services. Laboratory, radiology, and pharmacy services at the clinics are accessed through the primary care physician; other services (e.g., dental care) are accessed directly by the patient. After-hours care is handled by an answering service that refers callers to the on-call physician.

The change in primary care contractors at Isaac Coggs in 1990 has resulted in a problem in the handling of medical records. Records for patient care provided by the previous contractor are stored in the basement and have not been filed with the current records. Physicians who desire to review the patient's record maintained by the previous contractor may receive it within several hours. However, these prior records are not routinely provided to physicians during patient visits.

4. Revenue Sources and Financial Status

Both of the Milwaukee MHSP clinics have become more dependent on demonstration funding in recent years, as their difficulty retaining pediatricians has resulted in large declines of younger patients. Medicare accounts for about 85 percent of all revenues at Johnston, Medicaid accounts for about 12 percent, and the remaining revenues come from self-pay and private insurance. Isaac Coggs is less dependent on Medicare as a revenue source because of its funding from HRSA under the Federal CHC program, which provides about 29 percent of the clinic's revenues. The remaining revenue sources at Isaac Coggs include Medicare (47 percent of the total), Medicaid (14 percent), grants other than Federal CHC funding (8 percent), and self-pay and private insurance (2 percent).

D. THE SAN JOSE MHSP

The San Jose MHSP is the second largest of the four programs, receiving about 21 percent of all Medicare MHSP reimbursements in 1990. There is strong local interest in the MHSP and evidence of significant coordination of the MHSP with other organizations seeking to increase services to the elderly.

1. Administration and Organization

The San Jose MHSP is administered by the Office of the City Attorney. The City of San Jose does not have a health department because California law mandates that all public health functions in the State are the responsibility of counties rather than cities. The original rules of the demonstration required the MHSP to be administered by cities rather than counties, so San Jose placed this responsibility with the City Attorney. The MHSP Administrator in the City Attorney's office serves a limited role of program coordinator and fiscal agent for MHSP reimbursements from Medicare. The city MHSP Administrator does not supervise day-to-day operations at the clinics.

The San Jose MHSP includes four clinics. Two of the clinics (East Valley Clinic and Chaboya Clinic) are satellite clinics of the county public hospital. The public hospital also operates a third satellite clinic that is not in the MHSP demonstration. The two other MHSP clinics are operated by nonprofit organizations with a history of service to the poor. One of these clinics (St. James Health Center) is operated by the Family Health Foundation of Alviso (FHFA), a CHC which receives Migrant and Community Health Center funds from HRSA under sections 329 and 330 of the Public Health Service Act. FHFA also operates two non-MHSP clinics. The fourth MHSP clinic (Gardner Health Center) is a small, single-facility organization.

2. Staffing

The two satellite clinics of the county hospital each have a larger staff of primary care physicians than the two independent clinics. Collectively, the two county-operated clinics have 14.4 FTE primary care physicians, 13.2 FTE nurses, 5.0 FTE pharmacists, 4.0 FTE dentists, and 2.0 FTE nurse practitioners. No optometrists or podiatrists are on staff. St. James is notable for having over twice as many FTE dentists as primary care physicians (5.6 versus 2.7). Other health professionals at St. James include pharmacists (2.0 FTE), optometrists (1.8 FTE), a nurse (1.0 FTE), a nurse practitioner (0.8 FTE), and a podiatrist (0.6 FTE). St. James also contracts with a surgeon to see patients at the clinic one morning a month. Gardner is the smallest of the four MHSP clinics in San Jose, with 2.0 FTE primary care physicians, 1.8 FTE nurse practitioners, 1.0 FTE dentist, 0.6 FTE nurse, and 0.4 FTE optometrist.

Staff turnover at the two county-operated clinics is very low. All staff at these two clinics are employees of the county public hospital, a teaching hospital affiliated with Stanford University Medical School. Gardner has experienced significant difficulty in recruiting primary care physicians. St. James has been more successful in recruiting and retaining staff than Gardner. Both clinics offer salary and benefits significantly lower than those offered by the county hospital.

3. Accessibility of Services and Coordination of Care

The two county hospital satellite clinics are open from 8 a.m. to 10 p.m., Monday through Friday. At one of these clinics, medical services are available on Saturday from

8 a.m. until noon, and dental services are available from 8 a.m. to 5 p.m. The two other clinics are open from 8 a.m. or 9 a.m. to 6 p.m., Monday through Friday. Same-day appointments are usually available at all clinics, with triage handled by a staff nurse.

At each clinic, patients select or are assigned to a primary care physician, who is responsible for providing care and ordering referrals to specialists. Efforts are made to schedule each visit with the same physician. Laboratory, radiology, and pharmacy services are accessed by patients only through their primary care physician. Physicians at the two county hospital satellite clinics have admitting privileges to area hospitals, but physicians at Gardner and St. James do not have admitting privileges. When patients at Gardner and St. James require hospitalization, they are referred to outside physicians who manage their care while in the hospital. At the two county hospital satellite clinics, after-hours and emergency care available through an "on-call" physician. At the time of the site visit (early 1991), physicians at St. James were not providing on-call services to handle after-hours emergencies, due to financial problems at the clinic. On-call provisions for after-hours care at St. James have reportedly been restored.

4. Revenue Sources and Financial Status

The four MHSP clinics in San Jose differ in their primary sources of revenue. The two satellite clinics of the county hospital, Chaboya and East Valley, are funded primarily from county general funds. Medicare MHSP reimbursements account for 31 percent of total revenue at Chaboya and 12 percent of total revenue at East Valley. Each of these clinics receives about 11 percent of its revenues from Medicaid and less than 10 percent from self-pay and private insurance. Both clinics run large deficits for uncompensated care paid for by transfers from the county hospital. St. James receives 72 percent of its funding from the Medicare program. Additional revenue sources include Federal CHC grants, Medicaid, and self-pay, and private insurance. Gardner receives 53 percent of its direct patient revenue from Medicaid and 27 percent from Medicare. Other sources of funds include self-pay, private insurance, and grants from the United Way.

The financial stability of the clinics varies. Chaboya and East Valley are quite stable, primarily because of financial backing from the county government. In contrast, Gardner and St. James, both owned by nonprofit organizations, are financially vulnerable. Gardner is currently operating under a very close financial margin, although its financial position has recently improved--in part because it has recruited a more sophisticated board of directors that can assist it in securing grant funding. The financial situation at St. James is unstable. Following the withdrawal of FHFA from a Medicaid prepaid health plan contract worth $8 million (which had been costing the clinic $9 million to operate), St. James named a new executive director in an effort to improve the clinic's bleak financial circumstances.

III. EFFECTS OF THE MHSP ON SERVICE USE AND MEDICARE COSTS

In this chapter, we assess the effects of the MHSP demonstration on service use and Medicare costs. The objective of the Medicare waivers originally granted under the MHSP demonstration in 1979 was to determine whether offering expanded coverage for primary and preventive health care services to Medicare beneficiaries at selected inner-city health clinics would reduce Medicare costs. The expanded Medicare benefits offered under the demonstration include: (1) the waiver of the Part B deductible and coinsurance, and (2) coverage for many services not covered under the regular Medicare program, such as prescription drugs and dental care.

The benefit expansions granted under the MHSP demonstration may have both a direct (or immediate) effect and an indirect (or longer term) effect on Medicare costs. The direct effect of the waiver of the Part B deductible and coinsurance is to increase Medicare costs, as the Medicare program is paying the full cost of Part B services provided at MHSP clinics, and the elimination of beneficiary cost-sharing is expected to increase the use of such services. If increased use of physician services leads to the prevention and early detection of illnesses and more effective management of medical conditions, however, it may reduce Medicare costs on inpatient hospital care and other services. The direct effect of coverage for such additional services as prescription drugs and dental care is to increase Medicare costs, as the Medicare program is incurring expenditures on these services that it would not otherwise incur. Coverage for some of these services may affect costs for regular Medicare services, however, by affecting the health status of MHSP patients. For example, the coverage for prescription drugs may enable low-income beneficiaries with chronic conditions to obtain necessary medications that they could not otherwise afford, thus improving their medical condition and perhaps reducing their use of Medicare services. Alternatively, if medications are not properly prescribed and monitored under the demonstration, some beneficiaries could experience adverse health consequences that increase their use of Medicare services.[1] Finally, if MHSP clinics attract patients who otherwise would have obtained primary care services in hospital emergency rooms or outpatient departments (ERs/OPDs), Medicare costs will be reduced if the average cost of a primary care visit to an MHSP clinic is lower than the corresponding cost of a visit to a hospital ER/OPD. Such a shift in the site of care could yield additional cost savings if MHSP clinics provide better coordinated care and higher quality care than hospital ERs/OPDs. The net effect of the MHSP demonstration on Medicare costs depends on the balance between those factors which increase costs and those which reduce costs.

A. RESEARCH DESIGN

The primary research questions addressed in this chapter are:

- What are the Medicare costs and patterns of service use among beneficiaries who use the MHSP clinics?
- How do the demographic characteristics, service use patterns, and Medicare costs of MHSP patients compare with those of

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[1] The drug prescribing and monitoring behavior of MHSP physicians is assessed below in Chapter IV.

beneficiaries who live in the same areas but do not use MHSP clinics?

- What are the effects of the MHSP demonstration on service use and Medicare costs?

The answers to the first two questions provide useful descriptive information on MHSP patients, which is important for addressing the third question.

1. Overview of the Methodology

To assess the effects of the MHSP demonstration on service use and Medicare costs, we have conducted a variety of statistical analyses on Medicare beneficiaries who use the MHSP clinics (MHSP users) and a matched comparison group of beneficiaries who do not use the clinics (MHSP nonusers). The comparison group was used to estimate the service use and Medicare costs that would have been observed for MHSP users in the absence of the demonstration. We selected the comparison group from the service areas of the MHSP clinics to help achieve comparability between the two groups in socioeconomic status, the availability of health care providers, prevailing health care prices, and local practice patterns. We also used statistical methods to control for differences between MHSP users and nonusers on characteristics associated with the need for health care.

2. Beneficiary Samples

a. MHSP Users

The sample of MHSP users consists of all Medicare beneficiaries who used MHSP services at any time during the period 1987-89 and who met the following criteria:

- they were covered by Medicare and living in one of the demonstration cities at the start of the observation period (January 1, 1987);
- they were still living in the same city at the end of the observation period (December 31, 1989)--or at the time of their death if that was sooner;
- they were not enrolled in a Medicare HMO at any time during the 3-year observation period.

These restrictions were imposed to ensure that all sample members lived in one of the demonstration cities throughout the observation period and that Medicare claims data were available for all sample members throughout that period. Individuals entitled to Medicare due to end-stage renal disease (ESRD) were excluded from the sample because they constitute such a small percentage of the Medicare population and have service use and cost patterns much different from the rest of the Medicare population.[2] The sample includes 33,679 beneficiaries--19,490 in Baltimore, 1,918 in Cincinnati, 6,058 in Milwaukee, and 6,213 in San Jose.

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[2] ESRD beneficiaries constituted 0.3 percent of the original MHSP user sample and 0.7 percent of the original nonuser sample.

b. MHSP Nonusers

The comparison sample of MHSP nonusers consists of beneficiaries who lived in the service areas of the MHSP clinics during the 3-year observation period but did not use MHSP services during that period. To select this sample, we first identified the set of ZIP Codes in each city that comprised the MHSP service areas. Using the ZIP Code of residence of MHSP users on the Medicare enrollment file, we defined the MHSP service areas in each city as the set of ZIP Codes in which approximately 90 percent of MHSP users resided. We then randomly selected a sample of nonusers such that (1) the distribution of nonusers across ZIP Codes matched that of MHSP users, and (2) within each ZIP Code, the distribution of nonusers by race matched that of MHSP users. We used race as well as ZIP Code as a stratification variable in selecting the nonuser sample because we found that in some racially mixed ZIP Codes, the MHSP was drawing patients predominantly from one racial group. Including race as a stratification variable was intended to yield a sample of nonusers from the same (or similar) neighborhoods within ZIP Codes as the MHSP users.[3] The restrictions described above for the MHSP user sample were also imposed on the comparison sample. The final sample of MHSP nonusers includes 40,938 beneficiaries and is allocated across cities to match the percentage distribution of MHSP users.

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[3] As discussed below, this approach to drawing the MHSP nonuser sample was limited by the fact that the Medicare enrollment file identifies only three racial categories: white, black, and other.

3. Data Sources

The analyses described in this chapter used data from the following sources: (1) the claims and cost reports submitted to HCFA by MHSP clinics, (2) the Medicare enrollment file, and (3) Medicare claims for services rendered by non-MHSP providers.

a. MHSP Claims and Cost Reports

The sample of MHSP users in each city was identified from the claims submitted by the clinics to HCFA under the demonstration. These claims identify patients by name and Medicare identification (ID) number, and indicate the number of visits for routine physician services and the charges for each type of ancillary service provided. Reimbursements from Medicare for the services provided are not available directly on the claim, but require information from the cost reports submitted by the clinics to HCFA. We computed the Medicare reimbursement for routine visits using the allowable cost per routine visit from the relevant clinic's cost report for the relevant year. We computed the Medicare reimbursement for each type of ancillary service by multiplying the ancillary charges on each claim by the service-specific ratio of allowable costs to charges from the cost report for the relevant clinic and relevant year.

b. Medicare Enrollment File

The Health Insurance Skeleton Eligibility Write-off file, which identifies all individuals covered by Medicare, was used as the frame for drawing the comparison sample of MHSP nonusers and as the source of eligibility and demographic data for both MHSP users and nonusers. We obtained from the file each beneficiary's Medicare ID number, date of birth, sex, race, Medicaid buy-in status, current reason for entitlement (age, disability, or renal disease), original reason for entitlement, and the State, county, and ZIP Code of residence.

c. Medicare Claims for Non-MHSP Services

Our main source of claims data on services received by sample members from non-MHSP providers was the Medicare Automated Data Retrieval System (MADRS), HCFA's main file of Medicare claims. We used the MADRS file to compute such key measures of service use and cost as hospital admissions and Medicare payments by type of service. We also obtained detailed Part B claims data for Baltimore and Milwaukee. The data for Baltimore were obtained from a special file of Part B claims for 10 States maintained at HCFA, and the data for Milwaukee were obtained from the Medicare Part B carrier.[4] These data contain more detailed information on the use of physician services than is available from the MADRS file.

4. Data Limitations

Several limitations of the data should be noted. First, the Medicare enrollment file classifies all beneficiaries into one of three racial groups: (1) white, (2) black, and (3) other. Asians, Pacific Islanders, and Native Americans are all aggregated into the

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[4] Maryland is the only MHSP State included on the special 100 percent file of Part B claims maintained at HCFA. We did not obtain Part B data from the carriers for Cincinnati or San Jose because the carriers indicated that they could provide Part B claims for only a portion of our observation period and that providing such data would be very expensive.

"other" category. Hispanics are classified as either white or black, but it is not possible to distinguish whites and blacks who are of Hispanic origin from those who are not. These limitations in the racial and ethnic classifications used in the Medicare enrollment file are most relevant for San Jose, where Hispanics and Asians combined account for about 45 percent of the population. The racial category "other" is expected to consist primarily of Asians, so the approach we described above for matching the MHSP user and nonuser samples should have yielded samples with a similar proportion of Asians. Because of the absence of any information on Hispanic origin, however, we cannot be certain that the two samples contain comparable percentages of Hispanics.

The Medicare claims data do not provide information on the content of care received at hospital ERs/OPDs. Thus, while we can determine the total Medicare costs of services received by sample members at hospital ERs/OPDs, we cannot determine what proportion of the costs are for primary care. The data thus do not enable us to directly address the question of whether the MHSP demonstration has reduced the reliance on hospital ERs/OPDs as a source of primary care.

Finally, the data available for this evaluation do not contain information on such characteristics as household income, Medicare supplemental insurance coverage, education, health status, or functional status. Such information could have been obtained only through a beneficiary survey.

B. RESULTS

We have conducted a variety of descriptive and multivariate analyses to address the research questions identified above. The analyses were conducted separately for each city and for all cities combined. In the latter type of analysis, each sample member was weighted equally so the contribution of each city was proportional to its share of MHSP users. This yields estimates which represent the experience of the demonstration as a whole.

1. Use of Services by MHSP Patients

In 1989, services provided by MHSP clinics cost the Medicare program an average of $984 per patient (Table III.1). The cost of MHSP services per patient ranged from $684 in Cincinnati to $1,102 in San Jose. MHSP patients also obtained services from non-MHSP providers, so these figures represent only a portion of the total cost to Medicare of such beneficiaries. Pharmacy services constituted the largest share of MHSP costs in 1989, accounting for 36.5 percent of the total, followed by dental services at 25.7 percent and routine physician services at 17.7 percent. Together, ancillary services not normally covered under the Medicare program accounted for three-quarters of the total cost of MHSP services.

Sixty-one percent of the beneficiaries who used MHSP services in 1989 had a routine visit with an MHSP physician during the year. Thus, 39.0 percent used the MHSP for ancillary services only. The ancillary services used by the largest percentage of MHSP patients in 1989 were pharmacy services (used by 61.2 percent of all MHSP patients), laboratory services (47.1 percent), dental services (43.7 percent), optometry services (29.2 percent), and podiatry services (26.8 percent). The percentage of MHSP patients who used each type of service remained relatively stable during the period 1987-89 (not shown in the table).

TABLE III.1

MEAN COSTS TO MEDICARE FOR MHSP SERVICES IN 1989

	Cost to Medicare per MHSP User[1]	Percent of Total	Percent of MHSP Patients Who Used Each Service	Mean Cost of Each Service Among Users of the Service
All Cities				
All MHSP services	$984	100.0	--	--
Routine services	174	17.7	61.0	285
Laboratory	52	5.3	47.1	111
Radiology	21	2.1	18.6	110
Pharmacy	359	36.5	61.2	587
Podiatry	49	5.0	26.8	184
Dental[2]	253	25.7	43.7	579
Optometry	27	2.7	29.2	92
Eyeglasses	12	1.2	15.6	75
All other	37	3.8	19.4	190
Baltimore				
All MHSP services	1,015	100.0	--	--
Routine services	148	14.6	62.5	236
Laboratory	43	4.2	46.7	92
Radiology	14	1.4	17.7	79
Pharmacy	409	40.3	63.6	643
Podiatry	75	7.4	37.9	198
Dental	264	15.9	43.0	614
Optometry	19	1.9	28.8	67
Eyeglasses	13	1.3	13.2	95
All other	31	3.1	18.2	173
Cincinnati				
All MHSP services	684	100.0	--	--
Routine services	221	32.3	69.3	320
Laboratory	52	7.6	57.6	91
Radiology	14	2.0	28.6	49
Pharmacy	201	29.4	69.4	290
Podiatry	7	1.0	8.9	78
Dental	137	20.1	36.6	375
Optometry	10	1.5	17.3	58
Eyeglasses	2	0.3	9.8	2
All other	39	5.7	27.0	143

TABLE III.1 (continued)

	Cost to Medicare per MHSP User[1]	Percent of Total	Percent of MHSP Patients Who Used Each Service	Mean Cost of Each Service Among Users of the Service
Milwaukee				
All MHSP services	822	100.0	--	--
Routine services	122	14.8	49.3	247
Laboratory	55	6.7	39.1	139
Radiology	35	4.3	11.9	295
Pharmacy	258	31.4	45.1	571
Podiatry	4	0.5	7.9	57
Dental	203	24.7	38.6	528
Optometry	52	6.3	35.8	146
Eyeglasses	11	1.3	24.8	43
All other	81	9.9	19.9	410
San Jose				
All MHSP services	1,102	100.0	--	--
Routine services	283	25.7	63.3	447
Laboratory	80	7.3	51.7	154
Radiology	31	2.8	23.9	130
Pharmacy	332	30.1	64.2	518
Podiatry	18	1.6	12.9	142
Dental	292	26.5	52.0	562
Optometry	35	3.2	28.6	124
Eyeglasses	13	1.2	17.1	74
All other	17	1.5	20.4	85

NOTE: The sample for this table includes MHSP users who used an MHSP clinic at least once in 1989

[1] The cost to Medicare per MHSP user is the mean cost of MHSP services in 1989 computed across all sample members who used MHSP services that year.

[2] Dental services include dentures.

The final column in Table III.1 shows the mean cost to Medicare of each type of MHSP service among beneficiaries who used the service. The most expensive services according to this measure in 1989 were pharmacy services ($587 per user), dental care ($579), and routine physician services ($285). The services which exhibited the greatest increase in the mean cost per user from 1987 to 1989 for our sample were dental care (71.4 percent increase), optometry services (41.5 percent), and pharmacy services (40.4 percent). The mean cost of routine physician services among users of such services increased a more modest 8.8 percent during this period.

a. Beneficiaries Who Use the MHSP for Ancillary Services Only

In each year during the period 1987-89, approximately 39 percent of MHSP patients used the MHSP for ancillary services only. In 1989, the average cost of MHSP services provided to such beneficiaries was $469, of which $364--or 77.6 percent--was for dental care (Table III.2). The ancillary services which had the next highest average costs among this segment of the MHSP user population in 1989 were optometry services and eyeglasses ($43 per beneficiary), podiatry services ($32), and pharmacy services ($17). In 1989, beneficiaries who used MHSP clinics for ancillary services only accounted for 18.6 percent of the total costs of the demonstration to Medicare.

Many of the beneficiaries who use the MHSP for ancillary services only are obtaining physician services elsewhere and appear to have had no prior relationship with MHSP physicians. Among beneficiaries who used the MHSP in 1989 for ancillary services only, 84.7 percent exceeded the Part B deductible for services rendered by non-MHSP providers that year. Only 13.3 percent of these beneficiaries had a visit with an MHSP

TABLE III.2

COMPARISON OF BENEFICIARIES WHO USED THE MHSP FOR ANCILLARY SERVICES ONLY WITH ALL OTHER MHSP PATIENTS, 1989 (ALL CITIES)

	Users of the MHSP in 1989 for Ancillary Services Only	All Other MHSP Patients in 1989	Column 1 Minus Column 2
Mean Medicare cost in 1989			
Total	$3,950	$4,665	-$715 **
MHSP services	469	1,313	-844 **
Non-MHSP services	3,481	3,352	129
Mean MHSP cost in 1989, by type of service			
Routine services	0	285	-285 **
Laboratory	1	85	-84 **
Radiology	2	32	-30 **
Pharmacy	17	578	-561 **
Podiatry	32	61	-29 **
Dental	364	182	182 **
Optometry	30	25	5 **
Eyeglasses	13	11	2 **
All other	10	54	-44 *
Mean non-MHSP cost in 1989, by type of service			
Part A	2,130	2,172	-42
Inpatient	1,967	2,012	-45
SNF	41	36	5
Home health	82	91	-9
Part B	1,351	1,180	171 **
Physician/other suppliers	990	876	114 **
Outpatient hospital	360	303	57 **
Percent who exceeded the Part B deductible in 1989 (non-MHSP services)	84.7	76.0	8.7 **
Percent who exceeded the Part B deductible (non-MHSP services) in previous years			
1987	79.5	71.4	8.1 **
1988	82.7	74.5	8.2 **
1987 or 1988	89.1	86.2	2.9 **

TABLE III.2 (continued)

	Users of the MHSP in 1989 for Ancillary Services Only	All Other MHSP Patients in 1989	Column 1 Minus Column 2
Percent with an MHSP routine visit in previous years			
1987	9.2	72.3	-63.1 **
1988	9.1	81.6	-72.5 **
1987 or 1988	13.3	84.3	-71.0 **
Percent who used MHSP ancillary services in previous years			
1987	43.4	80.6	-37.2 **
1988	55.4	89.1	-33.7 **
1987 or 1988	63.7	91.3	-27.6 **
Sample Size	9,198	14,337	

*Significantly different from zero at the .05 level, two-tailed test.

**Significantly different from zero at the .01 level, two-tailed test.

physician in either 1987 or 1988, yet 63.7 percent used MHSP ancillary services during that period and 89.1 percent exceeded the Part B deductible for non-MHSP services in either 1987 or 1988. These patterns for the demonstration as a whole are similar to the patterns observed in each city.

Some of the Part B services obtained by beneficiaries who use the MHSP for ancillary services only may be specialty services not available from the MHSP clinics. The MADRS file, the main file of non-MHSP claims used in this study, does not contain enough information on Part B services to distinguish between primary care and specialty care. For Milwaukee, however, we can classify non-MHSP physician services by physician specialty using the detailed Part B claims we obtained from the carrier.[5] In 1989, beneficiaries who used the Milwaukee MHSP for ancillary services only had an average of 7.5 visits with non-MHSP physicians. About 18.2 percent of these beneficiaries had at least one visit in 1989 with a general or family practitioner, 36.1 percent had a visit with an internist, 37.3 percent had a visit with a specialist, and 43.2 percent had a visit with a physician in a clinic or group practice where the specialty code of the individual physician was not identified on the claim. The large number of beneficiaries in the final category limits our ability to determine the extent to which these beneficiaries were receiving primary care rather than specialty care from non-MHSP physicians. Nevertheless, from the percentages who visited general and family practitioners and internists, it is clear that a significant percentage of beneficiaries who used the Milwaukee MHSP in 1989 for ancillary services only obtained primary care services that year from non-MHSP physicians.

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[5] The detailed Part B claims data we obtained for Baltimore do not include a physician specialty code.

Using the MHSP for such ancillary services as dental care or optometry services while obtaining primary medical care from non-MHSP physicians is not prohibited by the demonstration rules. The coverage for a broad array of ancillary services was originally intended, however, to help attract low-income beneficiaries to the clinics as their source of primary and preventive medical care. The finding that significant numbers of beneficiaries are using the MHSP for dental care and other ancillary services while obtaining physician services only from non-MHSP providers suggests that the demonstration may not be targeted effectively to low-income beneficiaries who cannot afford primary medical care or who do not have access to such care.

We found that 7.9 percent of all MHSP patients in 1989 obtained MHSP pharmacy services without having a visit with an MHSP physician during the year. Only 20.0 percent of these beneficiaries visited an MHSP physician in 1988. From an analysis of the detailed Part B claims data for Baltimore and Milwaukee, we found that in each city nearly two-thirds of these beneficiaries had at least one office visit in 1989 with a non-MHSP physician. These findings are of potential concern, since the demonstration rules require that prescriptions filled by MHSP pharmacies be written by MHSP physicians. We cannot determine the types of MHSP pharmacy services these beneficiaries are receiving because such information is not included on the MHSP claims. The average cost of pharmacy services provided to such individuals in 1989 was $84, which is much lower than the average cost of pharmacy services provided to beneficiaries who had a visit with an MHSP physician in 1989 ($662). This suggests that the pharmacy services provided to beneficiaries who did not visit an MHSP physician may include such lower cost items as over-the-counter medications and medical supplies.[6]

b. Beneficiaries Who Use MHSP Physician Services

In 1989, the average cost of MHSP services among beneficiaries who had at least one visit with an MHSP physician during the year was $1,313 (see Table III.2 above). About 87 percent of these beneficiaries used MHSP pharmacy services in 1989, and about three-quarters used MHSP laboratory services. No other MHSP ancillary service was used by more than 35 percent of these beneficiaries. Pharmacy services accounted for 44.0 percent of total MHSP costs for this segment of the MHSP user population in 1989, followed by routine physician services (21.7 percent), dental services (13.9 percent), and laboratory and radiology services (8.9 percent). All other ancillary services accounted for a combined 11.5 percent of the total.

Beneficiaries who used MHSP physician services in 1989 also obtained significant amounts of care from non-MHSP providers. The average payment for non-MHSP Part B services for these beneficiaries in 1989 was $1,180--nearly three times the average combined cost of routine, laboratory, and radiology services they received from MHSP clinics ($402). Over three-quarters of these beneficiaries exceeded the Part B deductible for non-MHSP services in 1989. Most had used MHSP physician services in previous years; over 80 percent had at least one MHSP physician visit in 1988, and over 70 percent had at least one visit in 1987.

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[6] Over-the-counter medications and medical supplies are not covered services under the demonstration, although there has been confusion in the past concerning HCFA's policy in this area.

2. Descriptive Comparisons of MHSP Users and Nonusers

In this section, we present descriptive comparisons of MHSP users and nonusers with respect to demographic characteristics, service use, and Medicare costs. The results in the previous section showed that MHSP users can be grouped into two distinct categories: (1) those who use the MHSP for ancillary services only, and (2) those who use the MHSP for physician services as well as ancillary services. The cost-effectiveness of the MHSP demonstration is likely to differ for these two groups, since they receive a different mix of MHSP services. We have therefore analyzed them separately.

Our analysis focuses on beneficiaries who used MHSP services in 1989. For the analysis of users of MHSP physician services, we defined the comparison group as MHSP nonusers who had positive Medicare payments in 1989--that is, those who used enough Medicare-covered services to exceed the Part B deductible ($75 in 1989). For the analysis of users of the MHSP for ancillary services only, however, we defined the comparison group as all MHSP nonusers who were alive at the start of 1989, regardless of whether they had positive Medicare payments during the year. We chose not to restrict the comparison group for this portion of the analysis to beneficiaries who exceeded the Part B deductible, because not all beneficiaries who used the MHSP strictly for ancillary services in 1989 received physician services that year--and we cannot assume that they would have done so in the absence of the MHSP demonstration.

a. Demographic Characteristics

Beneficiaries who used MHSP physician services in 1989 had a significantly different demographic profile than MHSP nonusers who had positive Medicare payments in 1989.

The users of MHSP physician services were less likely to be under age 65 and disabled, less likely to be over age 85, and less likely to be covered by both Medicare and Medicaid (Table III.3). Each of these differences in demographic characteristics leads us to expect lower Medicare costs for MHSP users than nonusers, since Medicare beneficiaries who are older, disabled, or covered by Medicaid tend to be higher users of health care services than other beneficiaries. These differences are controlled for statistically in the estimates presented below of the effect of the demonstration on Medicare costs. The findings for individual cities are identical to the findings for the demonstration as a whole, except: (1) MHSP users in Cincinnati are more likely than nonusers to be under 65 and disabled, and (2) MHSP users in San Jose are more likely than nonusers to be covered by Medicaid. In general, the differences between users of the MHSP for ancillary services only and MHSP nonusers are similar to those just described for users of MHSP physician services.

The differences between MHSP users and nonusers in demographic characteristics may be due in part to the fact that MHSP clinics are not likely to be used by residents of nursing homes or other long-term care facilities. We cannot determine how much this contributes to the observed differences, however, because most beneficiaries in long-term care institutions cannot be identified in our data. We can identify beneficiaries who had Medicare claims for skilled nursing facility (SNF) care--the only type of nursing home care covered by Medicare--but we cannot identify beneficiaries who live in nursing homes providing intermediate care or in facilities providing custodial care. These latter beneficiaries are typically institutionalized for longer periods of time than users of SNF services and are the least likely to be users of MHSP clinics.

TABLE III.3

COMPARISON OF DEMOGRAPHIC CHARACTERISTICS OF MHSP USERS AND NONUSERS, 1989

	Users of MHSP Physician Services in 1989	Users of MHSP in 1989 for Ancillary Services Only	MHSP Nonusers with Positive Medicare Payments in 1989
All Cities			
Age distribution			
< 65 (disabled)	7.6 **	10.6 **	13.0
65 - 75	52.4	54.0	44.3
76 - 85	34.3	30.3	32.1
86 and over	5.7	5.2	10.6
Percent female	62.3 *	59.1 **	61.3
Percent on Medicaid	10.4 **	14.4 **	20.3
Baltimore			
Age distribution			
< 65 (disabled)	5.1 **	9.6 **	12.7
65 - 75	56.4	57.0	45.5
76 - 85	33.6	28.6	31.6
86 and over	4.9	4.8	10.2
Percent female	62.5 **	60.5	61.0
Percent on Medicaid	5.2 **	12.8 **	20.0
Cincinnati			
Age distribution			
< 65 (disabled)	18.9 **	25.7 **	13.4
65 - 75	47.8	43.6	44.1
76 - 85	28.5	25.4	32.8
86 and over	4.8	5.2	9.7
Percent female	64.6	64.1	62.0
Percent on Medicaid	10.0 **	12.7	14.4
Milwaukee			
Age distribution			
< 65 (disabled)	14.3 **	13.4 **	18.2
65 - 75	48.4	51.9	41.7
76 - 85	32.0	31.5	31.0
86 and over	5.2	3.2	9.1
Percent female	59.4	55.4 **	61.1
Percent on Medicaid	10.6 **	12.8 **	19.7

TABLE III.3 (continued)

	Users of MHSP Physician Services in 1989	Users of MHSP in 1989 for Ancillary Services Only	MHSP Nonusers with Positive Medicare Payments in 1989
San Jose			
Age distribution			
< 65 (disabled)	7.2 **	7.1 **	8.3
65 - 75	44.5	49.0	43.5
76 - 85	39.9	35.4	34.7
86 and over	8.5	8.5	13.5
Percent female	62.7	58.0 **	62.4
Percent on Medicaid	25.9 **	21.6	24.0

NOTE: Each of the variables in this table is categorical, so the statistical significance of differences between MHSP users and nonusers was assessed using the chi-square test. In the case of age, we tested whether the percentage distribution of MHSP users across the four categories differed significantly from that of MHSP nonusers.

*The difference between MHSP users and nonusers is statistically significant at the .05 level.
**The difference between MHSP users and nonusers is statistically significant at the .01 level.

b. Service Use and Medicare Costs

In this section, we present descriptive data on service use and Medicare costs for MHSP users and nonusers. These figures have not been adjusted for differences between the two groups in demographic characteristics or other factors associated with the need for health care, so they do not measure the effects of the demonstration on Medicare costs. These descriptive data are presented to provide a picture of the total Medicare costs incurred for MHSP users and nonusers and to serve as background for the multivariate analysis described below.

In 1989, users of MHSP physician services cost the Medicare program an average of $4,665, which was 9.6 percent below the average cost of $5,159 incurred for MHSP nonusers who had positive Medicare payments during the year.[7] Users of MHSP physician services had 38 percent lower costs for Part A services on average than MHSP nonusers ($2,172 versus $3,350). This large difference was due primarily to much lower inpatient hospital costs for MHSP users, but MHSP users also had significantly lower costs for SNF, home health, and other Part A services.[8] When the costs of MHSP services are included with the costs of other Part B services, users of MHSP physician services had 53 percent higher Part B costs on average than MHSP nonusers ($2,492 versus $1,629).

Determining how much of these unadjusted differences between MHSP users and nonusers in average Medicare costs is due to the effects of the demonstration rather than to pre-existing differences in health status is difficult given that the MHSP has been operational for over 10 years. For beneficiaries who have been using MHSP clinics for many years, we cannot determine definitively whether their lower average costs for Part A services primarily reflect improvements in their health attributable to the MHSP, or whether they would have been in better health even without the MHSP. To investigate, we have examined users of MHSP physician services who began using the MHSP in 1989 and compared their Medicare costs during the 2 previous years with that of MHSP nonusers (again focusing on MHSP nonusers who had positive Medicare payments in 1989). This analysis of new MHSP users enables us to investigate whether MHSP clinics are attracting Medicare patients who were lower users of Medicare Part A services than MHSP nonusers even before they began receiving MHSP services. Of the 14,337 beneficiaries in our sample who used MHSP physician services in 1989, 1,108 began using the MHSP that year.[9]

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[7] As described above, the comparison group for the analysis of users of MHSP physician services in 1989 consists of MHSP nonusers who had positive Medicare payments in 1989. To simplify the exposition, we often refer to this group simply as "MHSP nonusers."

[8] Other Part A services include those provided by psychiatric hospitals, rehabilitation hospitals, and hospices.

In the 2 years before they began using MHSP physician services, MHSP users had significantly lower average Medicare costs than MHSP nonusers (Table III.4). New users of MHSP physician services in 1989 had average Medicare costs that were 29 percent below that of nonusers in 1987 and 37 percent below that of nonusers in 1988. The differences in prior costs were greater for Part A services than for Part B services. New users of MHSP physician services in 1989 had average Part A costs that were 33 percent below the nonuser average in 1987 and 44 percent below the nonuser average in 1988.

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[9] We identified these beneficiaries as those who used MHSP physician services in 1989 but did not use any MHSP services in 1987 or 1988.

TABLE III.4

PRIOR SERVICE USE AND COST FOR NEW USERS OF MHSP PHYSICIAN SERVICES IN 1989 AND MHSP NONUSERS WITH POSITIVE MEDICARE PAYMENTS IN 1989

	Users of MHSP Physician Services Who Began Using the MHSP in 1989	MHSP Nonusers With Positive Medicare Payments in 1989	User-Nonuser Ratio
Mean total Medicare expenditure			
1988	$2,365	$3,727	0.63 **
1987	1,884	2,648	0.71 **
Mean Part A expenditure			
1988	1,372	2,452	0.56 **
1987	1,130	1,681	0.67 **
Mean Part B expenditure			
1988	993	1,275	0.78 **
1987	754	967	0.78 **
Hospital admissions per 1,000 beneficiaries			
1988	240	403	0.60 **
1987	216	319	0.68 **

NOTE: The sample of MHSP users in this table consists of beneficiaries who began using the MHSP in 1989 and had at least one visit with an MHSP physician in 1989. There are 1,108 such beneficiaries in the sample--539 in Baltimore, 78 in Cincinnati, 177 in Milwaukee, and 314 in San Jose.

**User-nonuser difference is significantly different from zero at the .01 level, two-tailed test.

The average Part B cost for the MHSP user sample was 22 percent below the nonuser average in both 1987 and 1988.

These findings indicate that the beneficiaries who began using MHSP clinics in 1989 for physician services had previously been much lower users of Medicare services than MHSP nonusers. While we cannot be certain that this has been the case throughout the history of the MHSP, it is unlikely that MHSP clinics began attracting Medicare patients in 1989 who were dramatically different from those attracted previously. This suggests that the much lower average Part A cost for *all* users of MHSP physician services in 1989 relative to MHSP nonusers may be due primarily to pre-existing differences in health status.

3. Determining the Effect of the MHSP on Medicare Costs

The effect of the MHSP demonstration on Medicare costs is the difference between the costs incurred for MHSP users and the costs that would have been incurred for them in the absence of the demonstration. Estimating the latter is difficult for a demonstration such as the MHSP that has been operational for over 10 years. The MHSP demonstration was not implemented with a randomized experimental design, so we have estimated its effects on Medicare costs by comparing the costs incurred for MHSP users with those incurred for a comparison group of MHSP nonusers. This requires determining how much of the difference in costs between the two groups is due to the effects of the demonstration and how much of it reflects differences that would have occurred in the absence of the demonstration--due, for example, to pre-existing differences in health status or care-seeking behavior. To control for such pre-existing differences between MHSP users and nonusers, we have used multivariate regression analysis.

Because of data limitations and the lack of a randomized experimental design, we cannot be totally confident that our regression models have fully controlled for pre-existing differences between MHSP users and nonusers. The regression results should therefore be interpreted as estimates of how the Medicare costs of MHSP users and nonusers differ, after controlling for differences between the two groups in certain observable characteristics (specified below). The regression results do not provide definitive estimates of the effects of the MHSP demonstration on Medicare costs but, together with the descriptive results presented above, provide the best possible basis for assessing whether the MHSP demonstration is cost-effective.

a. Methodology

Multivariate regression models were used to assess the effects of the MHSP demonstration on Medicare costs in 1989. We used the full sample of beneficiaries who used MHSP services in 1989 but conducted separate analyses of users of MHSP physician services and users of MHSP ancillary services only. The control variables used in our regression analysis include the following demographic characteristics: age; sex; race (white, black, or other); reason for Medicare entitlement (age or disability); Medicaid coverage; and original reason for Medicare entitlement.[10] Age was entered in our models as binary variables with six categories: less than 65 years of age (disabled), 65-69, 70-74, 75-79, 80-84.

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[10] The final variable was included to identify beneficiaries 65 years of age and over who were originally entitled to Medicare due to disability. Such beneficiaries have higher Medicare costs on average than other aged beneficiaries.

and 85 and over. In regressions which combined observations across all four cities, we also included variables indicating the sample member's city of residence to control for differences across cities in Medicare costs and practice patterns.

It is also important to control for differences between MHSP users and nonusers in the need for health care--or more precisely, differences in the need for care that would have existed in the absence of the demonstration. The latter qualification emphasizes one of the difficulties in attempting to control for differences in the need for care. For long-time users of MHSP clinics, the need for care in 1989 may have been influenced by past use of MHSP services. To the extent that the need for care has been reduced by past MHSP service use, its inclusion in our model would lead us to underestimate the long-term potential of the MHSP to reduce costs.[11] Despite this risk, the evidence presented above that new users of MHSP physician services have much lower prior Medicare costs than nonusers argues strongly in favor of controlling for differences between MHSP users and nonusers in the need for care. We specified control variables that were designed to control for differences between MHSP users and nonusers in the proportion of beneficiaries with chronic health conditions predictive of high Medicare costs in 1989. We used three such variables: (1) hospitalization two or more times during 1987-88, (2) use of home health services in 1988, and (3) use of home health services in both 1987 and 1988. We also included a control variable indicating whether or not the sample member died during 1989. This was included as an additional control for the need for care, because the period immediately preceding death is often characterized by extraordinarily high Medicare costs. The models were estimated using ordinary least squares (OLS) regression techniques.[12]

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[11] That is, we will be measuring the effect of the MHSP on Medicare costs in 1989, after controlling for differences between MHSP users and nonusers in the need for care at the start of 1989.

b. Results

The regression estimates imply that the MHSP demonstration increased the average total Medicare cost for users of MHSP physician services in 1989 by $440, an increase of 10.4 percent (Table III.5).[13] The estimates imply that the demonstration reduced the average Part A cost for users of MHSP physician services in 1989 by $583, but this was more than offset by an estimated increase of $1,023 in the average Part B cost (including the cost of MHSP services). The estimated percentage increase in average total Medicare costs was largest in San Jose (27.2 percent), followed by Milwaukee (17.6 percent), and Baltimore (7.2 percent). The estimated effect in Cincinnati was not statistically significant.

The regression estimates imply that in 1989 the demonstration increased the average total Medicare cost by $500 for beneficiaries who used the MHSP clinics for ancillary services only, an increase of 14.5 percent (Table III.6). The estimated effect on Part A costs was not statistically significant, so the increase in average total costs was due to the estimated increase in Part B costs. The estimated percentage increase in average total

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[12] We used OLS models rather than the two-part model that has been used in some studies of health care costs for the nonelderly population (Duan et al., 1982), because OLS models have been shown to yield more accurate predictions of Medicare expenditures (Hill et al., 1992).

[13] This estimated percentage effect of the demonstration is expressed as a percentage of the estimated Medicare costs that would have been incurred for users of MHSP physician services in the absence of the demonstration, as predicted from the regression model.

TABLE III.5

REGRESSION-ADJUSTED DIFFERENCES BETWEEN USERS OF MHSP PHYSICIAN SERVICES AND MHSP NONUSERS IN MEAN MEDICARE EXPENDITURES AND HOSPITAL ADMISSION RATES, 1989

	Medicare Expenditures and Hospital Admission Rates in 1989			
	Mean Value for Users of MHSP Physician Services	Regression-Adjusted Mean for MHSP Nonusers[1]	Adjusted User-Nonuser Difference	Implied Percentage Effect of the MHSP
All Cities				
Total expenditures	$4,664	$4,224	+440 **	+10.4
Part A expenditures	2,172	2,755	-583 **	-21.2
Part B expenditures	2,492	1,469	+1,023 **	+69.6
Hospital admissions per 1,000 beneficiaries	338	398	-60 **	-15.1
Baltimore				
Total expenditures	4,740	4,422	+318 *	+7.2
Part A expenditures	2,221	2,922	-701 **	-24.0
Part B expenditures	2,519	1,500	+1,019 **	+67.9
Hospital admissions per 1,000 beneficiaries	361	427	-66 **	-15.5
Cincinnati				
Total expenditures	3,573	3,774	-201	-5.3
Part A expenditures	1,846	2,401	-555	-23.1
Part B expenditures	1,728	1,374	+354 **	+25.8
Hospital admissions per 1,000 beneficiaries	322	394	-72 *	-18.3
Milwaukee				
Total expenditures	4,251	3,615	+636 **	+17.6
Part A expenditures	1,917	1,517	-400 *	-26.4
Part B expenditures	2,333	1,296	+1,037 **	+80.0
Hospital admissions per 1,000 beneficiaries	325	386	-61 **	-15.8
San Jose				
Total expenditures	5,034	3,956	+1,078 **	+27.2
Part A expenditures	2,283	2,455	-172	-7.0
Part B expenditures	2,747	1,497	+1,250 **	+83.5
Hospital admissions per 1,000 beneficiaries	282	306	-24	-7.8

*Significantly different from zero at the .05 level, two-tailed test.

**Significantly different from zero at the .01 level, two-tailed test.

[1] The regression-adjusted mean expenditures and admission rates for MHSP nonusers are the means predicted by the regression model for nonusers if they had the same characteristics as MHSP users.

TABLE III.6

REGRESSION-ADJUSTED DIFFERENCES BETWEEN USERS OF THE MHSP FOR ANCILLARY SERVICES ONLY AND MHSP NONUSERS IN MEAN MEDICARE EXPENDITURES AND HOSPITAL ADMISSION RATES, 1989

	Medicare Expenditures and Hospital Admission Rates in 1989			
	Mean Value for Users of the MHSP for Ancillary Services Only	Regression-Adjusted Mean for MHSP Nonusers[1]	Adjusted User-Nonuser Difference	Implied Percentage Effect of the MHSP
All Cities				
Total expenditures	$3,951	$3,451	+500 **	+14.5
Part A expenditures	2,131	2,267	-136	-6.0
Part B expenditures	1,819	1,183	+636 **	+53.8
Hospital admissions per 1,000 beneficiaries	338	332	+6	+1.8
Baltimore				
Total expenditures	4,277	3,744	+533 **	+14.2
Part A expenditures	2,371	2,522	-151	-6.0
Part B expenditures	1,905	1,221	+684 **	+56.0
Hospital admissions per 1,000 beneficiaries	388	364	+24	+6.6
Cincinnati				
Total expenditures	3,256	3,444	-188	-5.5
Part A expenditures	1,933	2,237	-304	-13.6
Part B expenditures	1,323	1,208	+115	+9.5
Hospital admissions per 1,000 beneficiaries	355	362	-7	-1.9
Milwaukee				
Total expenditures	3,255	2,772	+483 *	+17.4
Part A expenditures	1,661	1,760	-99	-5.6
Part B expenditures	1,594	1,012	+582 **	+57.5
Hospital admissions per 1,000 beneficiaries	338	349	-11	-3.2
San Jose				
Total expenditures	3,862	3,323	+539 *	+16.2
Part A expenditures	1,940	2,079	-139	-6.7
Part B expenditures	1,920	1,242	+678 **	+54.6
Hospital admissions per 1,000 beneficiaries	226	258	-32	-12.4

*Significantly different from zero at the .05 level, two-tailed test.

**Significantly different from zero at the .01 level, two-tailed test.

[1] The regression-adjusted mean expenditures and admission rates for MHSP nonusers are the means predicted by the regression model for nonusers if they had the same characteristics as MHSP users.

Medicare costs for beneficiaries who used the MHSP for ancillary services only was 17.4 percent in Milwaukee, 16.2 percent in San Jose, and 14.2 percent in Baltimore. The estimated effect in Cincinnati was not statistically significant.

These estimates apply to the MHSP users in our sample, who constituted approximately two-thirds of the total Medicare MHSP patient population in 1989.[14] The total costs to Medicare of MHSP services provided to beneficiaries in our sample in 1989 was $23.1 million, of which $18.8 million was for beneficiaries who used MHSP physician services and $4.3 million was for beneficiaries who used the MHSP for ancillary services only. The regression estimates discussed above imply that the MHSP demonstration increased total Medicare expenditures for the MHSP users in our sample by $10.9 million; that is, the Medicare program spent $10.9 million more for those beneficiaries than it would have spent in the absence of the demonstration. The estimated increase in Medicare expenditures in 1989 was $6.3 million for the beneficiaries in our sample who used MHSP physician services and $4.6 million for those who used the MHSP for ancillary services only. The effect of the demonstration on Medicare costs separately for beneficiaries who use MHSP physician services and those who use MHSP clinics for ancillary services only was also estimated. The overall effect across all MHSP users is the weighted average of the estimated effects for the two classes of user, where the weights are the proportion of MHSP users in each class. In 1989, 61.0 percent of MHSP users used MHSP physician services and 39.0 percent used the clinics for ancillary services only. Applying these weights to the estimated impacts for the two classes of user, we find that the estimated effect of the demonstration across all MHSP users in 1989 was to increase Medicare program costs by an average of $463 per beneficiary.

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[14] The criteria used to select the sample were described above in section III.A. Those criteria were applied to both the MHSP user sample and the nonuser sample.

The average cost to Medicare of the services provided under the demonstration in 1989 was $984 per beneficiary (see Table III.1). Thus, in 1989 each dollar spent by the Medicare program on MHSP services resulted in a net increase in total Medicare program expenditures of approximately 47 cents ($463 divided by $984). In 1989 the total cost to Medicare of all services provided under the demonstration was $30.052 million. Our estimates thus indicate that in 1989 the MHSP demonstration resulted in a net increase in Medicare program expenditures of $14.124 million. To project these findings forward to 1993, we assume that the average cost of MHSP services per beneficiary increased from 1989 to 1993 at the same rate as the average cost of regular (non-MHSP) Medicare services. Applying this ratio of .47 to the projected Medicare cost of MHSP services in 1993 ($46.148 million), we estimate that the MHSP demonstration will result in a net increase in total Medicare expenditures in 1993 of $21.690 million.

4. Access to Care for MHSP Users and Nonusers

Access to care may be defined as the ability of individuals to enter the health care system for preventive or therapeutic care. Access to care is influenced by the availability of providers and by the ability of individuals to pay for care. The MHSP clinics provide care to Medicare beneficiaries free of charge, so the demonstration is expected to either increase or maintain access to ambulatory care among beneficiaries in the MHSP service areas. An important question to ask is whether MHSP users would have had adequate access to care in the absence of the demonstration. Would they have obtained adequate office-based care from other providers in the community? Or would they have relied heavily on hospital emergency rooms and outpatient departments for their primary care? Would they have had adequate access to dental care and other services covered under the demonstration but not covered under the regular Medicare program?

These questions cannot be answered definitively without a true experimental design. To investigate whether the MHSP demonstration appears to have increased access to physician services for beneficiaries who use MHSP clinics, we used the detailed Part B claims data we obtained for Baltimore and Milwaukee to compare the physician visit rates for MHSP users and nonusers.[15] We conducted two sets of comparisons:

- a comparison of physician visit rates in 1989, by setting, for (1) users of MHSP physician services in 1989 and (2) MHSP nonusers who had positive Medicare payments in 1989; and
- a pre/post comparison of physician visit rates, by setting, for (1) users of MHSP physician services who began using the MHSP in 1989 and (2) MHSP nonusers who had positive Medicare payments in 1989.

The advantage of the latter comparison is that it provides information on the physician services received by MHSP users before they began using the MHSP. We were not able to compare access to dental care and other services covered under the demonstration, but not covered under the regular Medicare program, because we had no data on the use of such services by MHSP nonusers.

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[15] The use of physician services has been widely used in previous studies to measure access to care (for example, see Freeman et al., 1987).

In interpreting the data on use of physician services, it is important to keep in mind a fundamental difference between the way physician visits are measured for MHSP users and nonusers. For MHSP nonusers, the only visits in the claims data are visits that were covered by Medicare. Thus, for example, visits to physicians for routine physical exams are not included in the visit counts for MHSP nonusers. MHSP users, on the other hand, have visits to both MHSP and non-MHSP physicians, and their visits to MHSP physicians undoubtedly include some visits for routine physical exams. Thus, the visit counts for MHSP users include visits for routine physical exams, while the visit counts for MHSP nonusers do not. We do not have any way of determining the number of physician visits by MHSP nonusers for routine physical exams, and for MHSP users we cannot distinguish visits for routine physical exams from other visits.

Table III.7 presents physician visit rates in 1989 for users of MHSP physician services in Baltimore and Milwaukee and regression-adjusted visit rates for MHSP nonusers who had positive Medicare payments in 1989. The latter were obtained from regression models estimated on MHSP users and nonusers that included the same control variables as identified in the previous section. The regression-adjusted visit rates for MHSP nonusers are the visit rates predicted for nonusers if they had the same characteristics as users. In both Baltimore and Milwaukee, MHSP users had a higher average number of physician visits in 1989 than MHSP nonusers, after controlling for observable differences between the two groups. The higher visit rates for MHSP users were due to a higher rate of office visits. In Baltimore, the average number of office visits for MHSP users in 1989 was 7.09, while the regression-adjusted value for nonusers was 3.78. The user-nonuser difference in the rate of office visits was also large in

TABLE III.7

REGRESSION-ADJUSTED COMPARISONS OF PHYSICIAN VISIT RATES FOR USERS OF MHSP PHYSICIAN SERVICES AND MHSP NONUSERS, 1989

	Number of Physician Visits in 1989		
	Mean for Users of MHSP Physician Services	Regression-Adjusted Mean for MHSP Nonusers[1]	Adjusted User-Nonuser Difference
Baltimore			
Total visits	9.67	7.39	2.28 **
MHSP	5.26	0.00	5.26 **
Non-MHSP	4.41	7.39	-2.98 **
Office visits	7.09	3.78	3.31 **
MHSP	5.26	0.00	5.26 **
Non-MHSP	1.83	3.78	-1.95 **
Inpatient hospital visits	1.90	2.52	-0.62 **
Home visits	0.03	0.09	-0.06 **
Hospital ER/OPD visits	0.41	0.45	-0.04 *
Milwaukee			
Total visits	10.14	8.80	1.34 **
MHSP	4.82	0.00	4.82 **
Non-MHSP	5.32	8.80	-3.48 **
Office visits	7.10	4.52	2.58 **
MHSP	4.82	0.00	4.82 **
Non-MHSP	2.28	4.52	-2.24 **
Inpatient hospital visits	2.18	3.02	-0.84 **
Home visits	0.01	0.04	-0.03 **
Hospital ER/OPD visits	0.57	0.57	-0.00

NOTE: Data on visits to MHSP physicians are from the MHSP claims and data on visits to non-MHSP physicians are from the detailed Medicare Part B claims we obtained for Baltimore and Milwaukee.

*Significantly different from zero at the .05 level, two-tailed test.

**Significantly different from zero at the .01 level, two-tailed test.

[1] The regression-adjusted mean number of physician visits for MHSP nonusers is the mean value predicted by the regression model for nonusers if they had the same characteristics as MHSP users.

Milwaukee, although not as large as the difference in Baltimore (7.10 office visits for MHSP users versus 4.52 visits for nonusers). From the claims data, we cannot determine whether these higher visit rates for MHSP users represent a desirable improvement in access to care or whether they represent unnecessary utilization. It is also useful to note that, in both Baltimore and Milwaukee, MHSP nonusers are receiving the majority of their care in physicians' offices rather than in hospital ERs/OPDs.

Table III.8 presents comparisons of physician visit rates in 1988 and 1989 for (1) MHSP users of physician services who began using the MHSP in 1989 and (2) MHSP nonusers who had positive Medicare payments in 1989. By focusing on new users of the MHSP in 1989, we were able to conduct pre/post comparisons to see how visit rates for MHSP users changed from the year before they began using the MHSP (1988) to their first year of MHSP use (1989). These estimates have not been adjusted to control for differences between users and nonusers, because our objective in this analysis was to provide descriptive data on how visit rates for the two groups changed between 1988 and 1989. Due to sample size considerations, this analysis was conducted only for Baltimore.[16]

Beneficiaries in Baltimore who began using MHSP physician services in 1989 had an average of 3.72 office visits the previous year, which was nearly identical to the corresponding average for the comparison group (3.81). In 1989, however, new users of MHSP physician services had a significantly higher average number of office visits than the comparison group (5.86 versus 3.49). The average number of office visits to non-MHSP physicians for beneficiaries who began using MHSP physician services in 1989

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[16] Our sample of MHSP users contains 539 beneficiaries in Baltimore who began using MHSP physician services in 1989 but only 177 such beneficiaries in Milwaukee.

TABLE III.8

UNADJUSTED PRE/POST COMPARISONS OF PHYSICIAN VISIT RATES FOR NEW USERS OF MHSP PHYSICIAN SERVICES IN 1989 AND MHSP NONUSERS WITH POSITIVE MEDICARE PAYMENTS IN 1989 (BALTIMORE)

	Users of MHSP Physician Services who Began Using the MHSP in 1989	MHSP Nonusers Who Had Positive Medicare Payments in 1989	User-Nonuser Ratio
Mean number of physician visits			
1989	8.53	8.89	0.96
1988	6.40	8.95	0.72 **
Mean number of non-MHSP physician visits			
1989	5.72	8.89	0.64 **
1988	6.40	8.95	0.72 **
Mean number of office visits			
1989	5.86	3.49	1.68 **
1988	3.72	3.81	0.98
Mean number of non-MHSP office visits			
1989	3.05	3.49	0.87 *
1988	3.72	3.81	0.98
Mean number of inpatient hospital visits			
1989	1.87	3.73	0.50 **
1988	1.76	3.41	0.52 **
Mean number of hospital ER/OPD visits			
1989	0.48	0.58	0.83
1988	0.36	0.57	0.63 **
Mean number of home visits			
1989	0.04	0.08	0.50 *
1988	0.05	0.11	0.45 *

*Difference between users and nonusers significantly different from zero at the .05 level.

**Difference between users and nonusers significantly different from zero at the .01 level.

declined only modestly from 1988 to 1989 relative to the experience of the comparison group. Thus, new users of MHSP physician services in 1989--who had an average of 2.81 visits to MHSP physicians--continued to have office visits to non-MHSP physicians in 1989 at approximately the same rate as they had in the previous year.

One of the original objectives of the MHSP was to shift the site of primary care from hospital ERs/OPDs to MHSP clinics. It is useful to note that beneficiaries who began using MHSP physician services in 1989 had not been obtaining significant amounts of care from hospital ERs/OPDs in the previous year. In fact, their visits to physicians at hospital ERs/OPDs *increased* from 1988 to 1989 relative to the comparison group. Thus, for this group of new MHSP users, the MHSP did not appear to be a substitute for care received at hospital ERs/OPDs.

IV. QUALITY OF CARE ANALYSIS

In this chapter, we evaluate the quality of care provided by MHSP clinics. The approach we developed was to review the process of care at the clinics to determine whether it meets established clinical standards. The analysis was based on a review of the medical records of a sample of MHSP patients in each city. To provide a context for interpreting our findings, we compared them with the findings from a similar review of the process of ambulatory care provided to a national sample of Medicare beneficiaries enrolled in HMOs.

A. METHODOLOGY

1. Selection of MHSP Patients for Review

The sample of MHSP patients for the medical record review was selected from MHSP users who had one or more clinic visits for routine care during 1989. The sample included 912 MHSP patients--125 from Cincinnati, 125 from Milwaukee, 225 from San Jose, and 437 from Baltimore. The sample was selected from the two clinics in Milwaukee and the two clinics with the highest Medicare patient volume in both Cincinnati and San Jose. In Baltimore, which has five MHSP clinics, the sample was selected from the three highest-volume clinics. Within each city, the sample was allocated across clinics in proportion to the number of Medicare patients who had visits in 1989 for routine care. In analyses which combine observations across cities, observations have been weighted to account for the differential sampling rates.

2. Primary Data Collection

Clinics were requested to photocopy the medical record of each sampled beneficiary and mail the photocopy to the research team at SysteMetrics. In some instances, however, clinics were unable to locate a record for the sampled patient. In other instances, the patient's record did not reflect any primary care during the study period; in most of these cases, the medical record reflected care provided only by podiatrists, ophthalmologists, otolaryngologists, or dentists. We excluded beneficiaries in our original sample who did not have any primary care in 1989, because the review criteria we developed for this evaluation focused on primary care. We replaced such beneficiaries with replacement sample members who were selected according to the same criteria specified above. Medical records for 229 replacement cases were obtained from the MHSP clinics.

The original sample had been selected from MHSP patients with at least one routine visit in 1989 recorded on MHSP claims. The finding that the medical records of some sample members included only visits to podiatrists or dentists reflects a discrepancy between the medical records and the claims, because separate codes are to be used on the claims to indicate podiatry and dental care. This was due to billing errors, which are being corrected. The finding that some sample members had visits only to ophthalmologists or otolaryngologists does not necessarily indicate a discrepancy between the medical records and the claims, however, because such visits can only be coded on the MHSP claims as routine visits (even though they are not primary care visits).

Once medical records were received, registered record administrators abstracted the following data items from them:

- clinical conditions present;
- outpatient procedures performed;
- number of laboratory studies performed including complete blood count, electrolytes, glucose level, drug serum level, coagulation studies, liver function tests, renal function tests, other renal function tests, urinalysis, and lipid panel;
- number of radiology studies; and
- number of physician encounters.

Physician encounters were defined as a visit with a physician or physician extender (nurse practitioner or physician assistant). Next, registered nurses (RNs), using both criteria and their clinical judgment, reviewed each record to identify any potential quality of care problems, which were referred to primary care physician reviewers.[1] Physician review included issues noted by the nurse reviewers as well as any other quality of care issues the physicians may have noted. Completed abstract forms were edited by SysteMetrics staff and entered into a computerized database.

3. **Review Criteria**

We focused on the overall quality of care delivered by MHSP clinics, in addition to potential problems resulting from over- or under-utilization of MHSP services. Because coverage for drugs is one of the major benefits offered under the MHSP, we concluded that a review of drug prescribing and monitoring activity would yield important information on the quality of MHSP clinic care. The criteria developed for review of drug prescribing and monitoring activity included:

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[1] Results of the nurse reviews were entered on the medical record abstract forms, which also contained the data previously abstracted by the record administrators.

- appropriateness of indications for prescribing the drug based on the patient's disease state, severity of illness, allergies, and possible drug interactions for those patients receiving multiple medications;
- appropriateness of dosage and dosage interval;
- monitoring for therapeutic serum levels or toxicity;
- monitoring for side effects;
- appropriateness of physician intervention in response to adverse drug reactions; and
- appropriateness of the refill interval based on the dosage and dosage interval ordered by the physician.

Criteria were also developed to assess the general aspects of medical care provided to the patient and included the appropriateness of:

- baseline data such as annual history, physical examination, current drug record, and documentation of allergy status;
- consultations, diagnostic, and therapeutic ancillary services;
- patient education; and
- care for four chronic conditions, which included:

- ***Hypertension*.** Blood pressure, weight recorded, and appropriate periodic screening scheduled;

- ***Diabetes*.** Appropriate testing including monitoring of glucose levels, complications monitored and managed appropriately and appropriate periodic screening scheduled;

- ***Ischemic coronary artery disease (CAD)*.** Heart rate, rhythm, and anginal symptoms controlled; cardiac compensation documented; and appropriate periodic screening scheduled; and

- ***Chronic Pulmonary Disease (CPD)*.** Appropriate monitoring including pulmonary functions tests, appropriate therapy, appropriate medications and other therapeutic options and appropriate periodic screening scheduled.

In addition to criteria-based review, problems were identified and confirmed using the clinical knowledge and judgment of the reviewers.

A limitation of the analysis is that it focuses only on the care beneficiaries received at the MHSP clinics. We have not reviewed the care MHSP patients received from other providers, so we cannot assess the overall quality of care received by those beneficiaries.

4. Medical Record Review Methodology

The process of care was evaluated using data abstracted from the medical records of sampled MHSP cases. Data were abstracted on diagnoses, procedures, laboratory and radiology tests, and the number of physician encounters, which also included encounters with physician extenders. Next, using both a set of criteria and clinical judgment, RNs reviewed the records to identify potential quality of care problems. Cases with potential quality of care problems were referred to primary care physicians for a final review and an assessment of quality that was based on clinical judgment. Physician reviewers classified the severity of each problem and assigned it to a category between one and three. Severity one represented medical mismanagement *without the potential* for significant effects, and severity two reflected medical mismanagement problems *with the potential* for significant effects. Severity three exemplified medical mismanagement *with significant adverse effect* and constituted "major" problems. If more than one problem was identified for a case, the case was classified according to the highest severity problem. Problems were also assigned a type that reflected drug-specific, disease-related, or treatment-associated etiology. Drug-specific problems included issues pertaining to medications or drug allergies. Disease-related problems consisted of treatment for specific diseases for which criteria were developed. Treatment associated problems reflected issues involving the appropriateness of baseline data, patient teaching, and consultative, diagnostic, and therapeutic services.

5. Medicare HMO Comparison Group

To provide a basis for interpreting the findings for the MHSP clinics, we have compared them with the findings from a similar medical record review of a comparison sample of Medicare HMO enrollees. We selected a national sample of 300 Medicare HMO enrollees whose medical records had been reviewed for quality of care by a peer review organization (PRO) and by SysteMetrics' SuperPRO staff. The same criteria were used for the review of the HMO enrollees as were used in this evaluation for the MHSP patients, except that the former did not include a review of drug prescribing and monitoring behavior. Data on the outcome of SuperPRO reviews, including the highest severity level assigned to a problem case, were manually abstracted. Where no SuperPRO record was found, the appropriate PRO review was identified and abstracted. These data were limited to identifying problem cases and assigning a severity level. Counts of problems were not completed nor were problems categorized by type.

We did not collect medical record data from non-MHSP providers in the MHSP service areas. This would have been very costly, and we were concerned that a large proportion of non-MHSP providers in the MHSP cities would have refused to release their medical records for review. The Medicare HMO sample allows us to compare the quality of care received by MHSP patients with that received by another segment of the Medicare population. However, we cannot compare the quality of care provided by MHSP clinics with that provided by other community providers that MHSP patients may have used in the absence of the demonstration.

6. Assessment of Continuity of Care

Continuity of care may be defined as "the extent to which medical services are received as a coordinated and uninterrupted succession of events consistent with the medical care needs of patients" (Shortell, 1976). An assessment of the continuity of care provided to MHSP patients was included in the medical record review of the overall process of care provided to patients. We also attempted to examine continuity of care through an analysis of claims data, by comparing the number of different physicians seen by MHSP users and nonusers. This type of analysis has been recommended in the literature and is based on the presumption that obtaining care from many different physicians may be lead to poor continuity of care (Erikkson and Mattson, 1983).

Our attempt to compare MHSP users and nonusers with respect to the number of different physicians seen in 1989 was hampered by data limitations, so we do not present the results of that analysis in this report. The MHSP claims do not identify the physician who provided the service, so we cannot determine from the claims whether patients see the same physician on successive visits to the clinic or whether they see different physicians. We investigated the number of different MHSP physicians seen by sample members in the medical record review, but we do not have corresponding data for nonusers who obtained care from non-MHSP clinics or group practices. The latter problem reflects limitations of the physician ID numbers on Part B claims, which do not enable us to uniquely identify physicians.[2] In general, physicians are identified on Part B claims by billing numbers. These do not permit the unique identification of individual physicians, because (1) some physicians have multiple billing locations, and thus multiple ID numbers, and (2) physicians in clinics or group practices often bill under the same number. Given these limitations, the claims data will not support a meaningful analysis of continuity of care.

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[2] This limitation of the physician ID system on Part B claims prompted HCFA to develop the Unique Provider Identification Number system, which is designed to uniquely identify physicians on claims. This system was not implemented until after the end of our analysis period.

B. RESULTS

1. Case Characteristics

Eight-five percent of cases were between 65 and 84 years of age, and approximately 61 percent were female. Almost 55 percent of cases were treated by only one MHSP physician or physician extender in 1989 (Table IV.1). Most of the patients (93 percent) had multiple encounters with MHSP physicians or physician extenders during the year. Almost 80 percent of the cases were treated with three or more medications, and some of those patients (11.2 percent) received more than 10 medications. A large majority of cases (78 percent) had three or more laboratory services within the year yet only a small proportion (17.6 percent) had multiple radiology services during the same period.

2. Quality of Care Findings

Approximately 48 percent of the cases across all cities were referred for physician review, and problems were identified in 37.3 percent of all cases (Table IV.2). Of the problem cases, 8.1 percent were classified as severity level 1 and 91.9 percent were classified as severity level 2. No problem cases were classified as severity level 3, indicating that while problems occurred in the delivery of care, there were no major problems with significant adverse effects on patients. Cases for which a quality of care problem was found had an average of 1.6 problems per case.

TABLE IV.1

OVERVIEW OF MHSP SERVICES USED IN 1989 BY MHSP PATIENTS IN THE SAMPLE FOR THE QUALITY OF CARE ANALYSIS

	All Cities	Baltimore	Cincinnati	Milwaukee	San Jose
Mean number of visits with MHSP physicians or physician extenders	5.7	5.8	5.5	4.7	5.7
Mean number of different MHSP physicians or physician extenders seen	1.7	1.7	1.4	1.9	1.6
Percent distribution of the number of different physicians or physician extenders seen					
one	54.6	56.4	64.3	42.3	55.4
two	25.4	22.4	28.6	34.2	28.6
three	10.4	10.4	3.2	12.2	10.3
four or more	9.7	10.8	3.9	11.3	5.7
Mean number of medications	5.7	5.9	6.2	5.0	5.5
Mean number of laboratory services	9.6	9.8	6.6	8.3	10.2
Mean number of radiology services	0.7	0.7	0.5	0.6	0.9

SOURCE: MHSP medical records.

TABLE IV.2

QUALITY OF CARE PROBLEM RATES IN THE MHSP COMPARED WITH A NATIONAL SAMPLE OF MEDICARE HMO ENROLLEES

	Sample Size	Problem Rate[1]	Number of Problems Per Problem Case	Adjusted Problem Rate[2]	Distribution of Problem Cases by Severity Level[3]	
					Level 1	Level 2
All Cities[4]	912	37.3 %	1.6	32.1 % **	8.1	91.9
Baltimore	437	37.8	1.6	31.8 **	5.8	94.2
Cincinnati	125	50.0	1.9	42.9 **	1.7	98.3
Milwaukee	125	48.0	1.9	48.0 **	13.8	86.2
San Jose	225	27.7	1.5	21.4	12.5	87.5
HMO Comparison Group[5]	300	NA	NA	17.0	17.6	66.7

[1] The problem rate is the percentage of reviewed cases for which a quality of care problem was found.

[2] The adjusted problem rate is the percentage of reviewed cases for which a quality of care problem not related to prescription drugs was found. This adjusted rate was computed for the MHSP sample for comparison with the HMO comparison sample, as the review criteria for the latter did not include an assessment of drug prescribing and monitoring behavior.

[3] No cases were found with a problem of severity level 3--i.e., major problems with a significant adverse effect on the patient.

[4] The estimates for all MHSP cities combined were weighted to adjust for the different sampling rates across cities.

[5] The severity level of the problem was not available for 15.7 percent of the cases in the HMO comparison sample.

NA: Data not available.

**Significantly different from the problem rate for the HMO comparison group, two-tailed test, .01 level.

Cincinnati and Milwaukee exhibited the highest problem rates, followed by Baltimore and San Jose. The average number of problems per problem case across sites was similar, ranging from 1.5 to 1.9. Between 87.5 and 98.3 percent of the problem cases within cities were classified as severity level 2, and as noted previously, there were no cases in any city with severity level 3 problems.

By age category, the distribution of overall cases and problem cases was remarkably similar. Patients between 65 and 84 years accounted for the vast majority of both reviewed and problem cases. Females accounted for slightly more problem cases (64.2 percent) than reviewed cases (60.8 percent) overall.

The problem rate for the HMO comparison group was 17.0 percent. The comparison group was reviewed using the same criteria as the MHSP sample, except for the review of drug prescribing and monitoring behavior. We therefore adjusted the MHSP data so that drug-only problems were not counted as problems to make the data comparable with the HMO comparison group. This adjustment decreased the MHSP problem rate from 37.3 percent to 32.1 percent. Thus, the rate of non-drug problems in the MHSP clinics was nearly twice as high as the problem rate found for Medicare HMO enrollees. Each city except San Jose had a significantly higher non-drug problem rate than the HMO comparison group.

Over 59 percent of the problems found for the MHSP sample were associated with treatment issues such as inadequate collection of baseline data; diagnostic and therapeutic services that were inappropriately ordered; abnormal results without follow-up; and inadequacies associated with patient teaching and education (Table IV.3). Specific

TABLE IV.3

PERCENTAGE DISTRIBUTION OF QUALITY OF CARE PROBLEMS IN THE MHSP BY TYPE OF PROBLEM

	Disease-Specific Problems[1]	Drug-Specific Problems[2]	Treatment Problems[3]
All Cities	16.0%	24.1%	59.2%
Baltimore	17.6	25.9	56.5
Cincinnati	11.1	26.5	62.4
Milwaukee	24.2	27.4	48.4
San Jose	7.0	15.6	77.4

NOTE: This table shows the percentage distribution of all problems found in the reviewed cases by major type of problem. The denominator is thus the number of problems found, not the number of cases with a problem.

[1] Disease-specific problems relate to the treatment of patients with specific diseases, including hypertension, diabetes, ischemic coronary artery disease, and chronic pulmonary disease.

[2] Drug-specific problems relate to the prescribing and monitoring of prescription medications.

[3] Treatment problems relate to the appropriateness of baseline data collected, patient teaching, and diagnostic and therapeutic services provided.

examples of treatment problems include lack of a history and physical in the study year (13.7 percent of all reviewed cases), inadequate documentation of allergies (7.1 percent), absence of a current drug record (6.1 percent), and inappropriately ordered ancillary services (5.9 percent). The remainder of problem categories associated with treatment issues each accounted for less than 2 percent of all problems.

The second most common type of problem related to the prescribing and monitoring of drugs and accounted for 24.1 percent of all problems. Drug-specific problems included inappropriate monitoring; inappropriate refill intervals and dosages; drugs prescribed without apparent indications; adverse drug reactions without the proper intervention; and drug interactions. Disease-specific problems accounted for 16.0 percent of all problems and included problems such as patients with hypertension without a recorded blood pressure or weight, inappropriate therapy, or an inappropriate periodic screening schedule; patients with diabetes without appropriate testing or therapy or complications that were inappropriately managed; and cases with ischemic CAD with uncontrolled anginal symptoms, heart rate, and rhythm; and patients with CPD without appropriate monitoring or therapy.

To investigate the types of differences that exist between problem and non-problem cases, we compared the two groups with respect to the average number of medications, laboratory studies, radiology studies, and physician encounters. We found two statistically significant differences. Problem cases had a higher average number of medications in 1989 than non-problem cases (4.8 versus 3.9) but a lower average number of lab studies than non-problem cases (8.1 versus 9.9).

C. DISCUSSION

We identified a number of quality of care problems among MHSP patients. However, we found no major problems which resulted in observable, significant adverse effects on patients. This was true of the Medicare HMO comparison group as well. The majority of the problems identified for MHSP patients were associated with inadequate initial or ongoing treatment. It is important to emphasize that the review methodology was designed to avoid counting minor inadequacies in the documentation contained in medical records as quality of care problems. Thus, the problems we found are instances in which MHSP clinics did not provide appropriate medical care.

V. COST PROJECTIONS

The total cost of the MHSP demonstration to Medicare has been rising rapidly, with an average annual rate of increase of 17 percent a year from 1985 to 1990. Total MHSP Medicare demonstration costs more than doubled during this period. In this chapter, we examine past trends in MHSP Medicare costs and project these costs for the remaining period of the demonstration.

We obtained Medicare Cost Reports for each MHSP clinic for each year from 1985 through 1990.[1] From these reports, we extracted total Medicare costs by 14 service types, including administrative costs allocated to each service type by the clinic's step-down procedures. Costs were then aggregated across clinics within each city for each service category. Trends in service-specific costs were investigated for each city.

A. MHSP MEDICARE COST TRENDS 1985-1990

Total MHSP Medicare demonstration costs rose from $14.6 million in 1985 to $34.8 million in 1990. The Baltimore MHSP accounted for the largest proportion of total MHSP Medicare costs, with its share of costs growing over time. Over $8.7 million, or 60 percent of total costs, in 1985 and $22.7 million, or 65 percent of total costs, in 1990 were incurred in Baltimore. San Jose accounted for the second largest proportion of total MHSP Medicare costs--$3.0 million in 1985 and $7.4 million in 1990--maintaining a 21 percent share of costs throughout the analysis period. Milwaukee accounted for $2.1 million, or 14 percent or total costs, in 1985 and $3.5 million, or 10 percent of total costs, in 1990. Cincinnati had the smallest share of total costs; the site incurred $680,960, or 5 percent of total costs, in 1985 and $1.3 million, or 4 percent of total costs, in 1990.

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[1] Except for San Jose, the cost reports for 1990 are "unsettled." Differences between initial unsettled reports and final settled reports have been found to vary by ± 13 percent.

The shifting shares of MHSP Medicare costs are due to differential growth rates among the sites over the 1985-90 period. Baltimore experienced the highest average annual rate of growth in total costs (19.1 percent), followed by San Jose (17.6 percent), Cincinnati (12.7 percent), and Milwaukee (9.7 percent). Overall, the average annual rate of growth for total MHSP Medicare costs from 1985 to 1990 was 17.4 percent.

In all sites and in all years, the costs for ancillary services were substantially higher than the costs for routine care. There were differences over time and among sites in the percentage of total costs accounted for by ancillary services, however. In 1990, ancillary costs accounted for 85 percent ($29.5 million) of total costs for all sites combined. This was up from 75 percent ($10.9 million) of total costs in 1985. The Baltimore and Milwaukee programs offered the greatest array of ancillary services and, as a result, had the highest proportions of total cost accounted for by ancillary services. The rate of growth for total ancillary services also exceeded the rate of growth for routine services at all sites--the difference in growth rates was especially notable in Baltimore. For all sites combined, the average annual growth rates for total ancillary and total routine services in the period 1985-90 were 19.9 percent and 7.6 percent, respectively. In Baltimore, the growth rates were 22.6 percent for ancillary services and 3.3 percent for routine care.

Pharmacy cost is the largest single component of ancillary service costs, with its share of total cost growing over time. Pharmacy services accounted for 25.5 percent ($3.7 million) of total MHSP Medicare costs in 1985 and 34.3 percent ($11.9 million) in 1990.

B. PROJECTION PROCEDURES

An analysis of cost trends revealed that the growth in MHSP costs for the entire demonstration and for Baltimore and San Jose was approximately linear over the period from 1985 through 1990. In Milwaukee and Cincinnati, however, the growth in MHSP Medicare costs slowed somewhat in the latter part of the period. We fit both linear and quadratic growth models to each service category in each study site. In the linear models, each category of MHSP costs was specified as a function of a constant plus a linear time trend.[2] In the quadratic models, an additional term equal to the square of the time trend was included, to allow for a nonlinear growth path. The quadratic models produced unsatisfactory results--e.g., some negative and some unreasonably high forecasts. Therefore, we based our projections on the linear growth models but used different base periods to estimate the models. For Baltimore and San Jose, we estimated the models on data from the entire period from 1985-1990. For Cincinnati, we used either 1986-1990 or 1985-1990 depending on the service type, and for Milwaukee, we used either 1987-1990 or 1985-1990. The estimated service-specific coefficients from these models were used to project program costs for each service category by site from 1991 through 1993. Total projected costs were calculated by aggregating projected service-specific costs by site and across sites for each projection year.

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[2] The time trend was set equal to 1 for 1985, 2 for 1986, and so on.

C. PROJECTED MHSP MEDICARE COSTS 1991-1993

Projected total MHSP Medicare costs are $38.2 million for 1991, $42.2 million for 1992, and $46.1 million for 1993. This represents a 33 percent increase in total cost from 1990 to 1993 and a 9.8 percent average annual rate of growth over the projection period. Graphical representations of actual and projected Medicare costs by major service category for each MHSP site for the entire demonstration and for the period 1985-1993 are shown in Figures V.1 and V.2, respectively. These projections show ancillary services and, in particular, pharmacy services consuming an increasing share of the total MHSP budget over time. By 1993, pharmacy costs are predicted to comprise 37 percent of all MHSP Medicare demonstration costs.

1. Baltimore

MHSP Medicare costs in Baltimore follow a steep linear growth trend from 1985 to 1990. We assumed this linear growth would continue in the projection period. Projected total Medicare costs for the Baltimore MHSP are $24.8 million for 1991, $27.6 million for 1992, and $30.3 million for 1993. Costs are projected to increase at an average annual rate of 10.1 percent, making total MHSP costs at the site one-third higher in 1993 than in 1990. Routine care costs are predicted to increase at an average annual rate of 6.9 percent in the projection period while ancillary service costs are predicted to increase at an average annual rate of 10.5 percent. Pharmacy costs--the single largest component of MHSP

FIGURE V.1

ALL MHSP SITES ACTUAL COSTS FOR 1985-1990
AND PROJECTED COSTS FOR 1991-1993

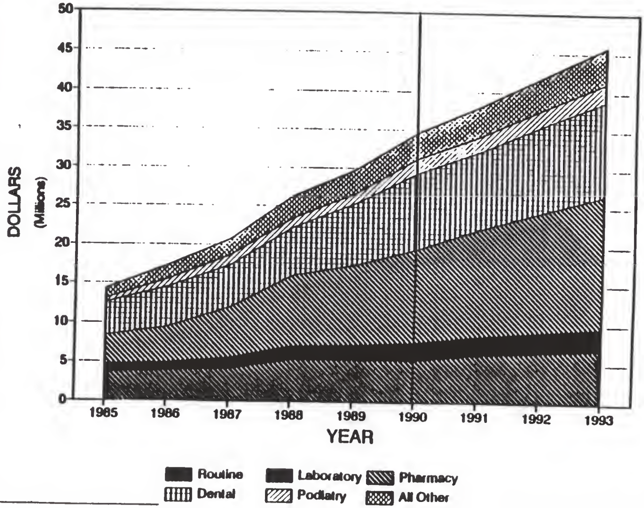
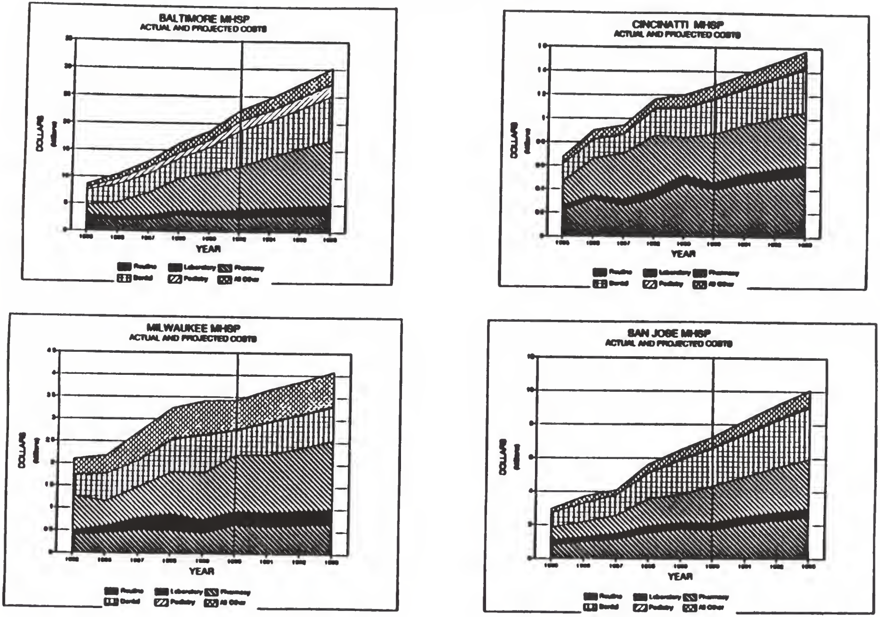


FIGURE V.2

ALL MHSP SITES ACTUAL COSTS FOR 1985-1990
AND PROJECTED COSTS FOR 1991-1993



Medicare costs--are predicted to grow at an average annual rate of 14.8 percent from 1990 to 1993. By 1993, these costs are predicted to comprise 40 percent of all MHSP Medicare costs in Baltimore.

2. Cincinnati

While MHSP Medicare costs in Cincinnati grew throughout the period 1985-90, the growth was not as steady or as steep as experienced in Baltimore. Hiring freezes and capacity constraints plagued the Cincinnati MHSP in the late 1980s, keeping growth in check. We assumed the moderate rate of growth in costs seen in the 1986-1990 period continued through the projection period. Projected total MHSP Medicare costs for the Cincinnati MHSP are $1.4 million in 1991, $1.5 million in 1992, and $1.6 million in 1993. Total costs for Cincinnati MHSP are projected to grow at an average annual rate of 7.2 percent from 1991 to 1993 and to be 23 percent higher at the end of the period than in 1990. Routine care costs are predicted to increase at an average annual rate of 9.6 percent in Cincinnati while costs for ancillary services are predicted to grow at a slower rate of 6.1 percent.

3. Milwaukee

MHSP Medicare costs in Milwaukee are characterized by a marked slowing in growth in the 1988-90 period compared to the 1985-88 period. This slowing was due to several factors, including complete turnovers in staff at the Johnston clinic in 1988 and at the Isaac Coggs clinic in 1988 and 1990 and to the closing of the Capitol Drive clinic in 1990. The cost projections for most service types in Milwaukee are based on the trends in these latter years.

Projected total Medicare costs for the Milwaukee MHSP are $3.7 million in 1991, $3.9 million in 1992, and $4.1 million in 1993. Overall, MHSP Medicare costs in Milwaukee are predicted to increase at an average annual rate of 5.8 percent in the projection period. Routine care costs are predicted to increase more slowly at an average annual rate of 2.3 percent and ancillary services somewhat higher at an average 6.6 percent a year.

4. San Jose

MHSP Medicare costs at the San Jose site exhibit a fairly steady linear growth trend throughout the 1985-1990 period, which we assumed would continue during the projection period. Projected total MHSP Medicare costs for the San Jose MHSP are $8.3 million in 1991, $9.2 million in 1992, and $10.1 million in 1993. Overall costs are projected to increase at an average 11.3 percent rate of growth per year. Routine care costs are predicted to grow at an average annual rate of 13 percent and ancillary service costs at an average annual rate of 10.7 percent.

VI. SUMMARY

The MHSP demonstration is unusual in that it has been operational for over 10 years. It was originally implemented in the late 1970s with funding from the Robert Wood Johnson Foundation (RWJF) to help cities improve access to primary and preventive health care services for inner-city residents of all ages. After the termination of RWJF funding in 1984, however, the MHSP became a Medicare-only demonstration. The basic structure of the demonstration regarding the provision of Medicare services has not changed since its inception.

This evaluation yielded the following conclusions:

1. The scale of the MHSP demonstration varies significantly across cities. In 1990, Medicare expenditures for MHSP services were $22.7 million in Baltimore, $7.4 million in San Jose, $3.5 million in Milwaukee, and $1.3 million in Cincinnati.

2. The composition of Medicare expenditures under the MHSP demonstration has changed since the early years of the demonstration, with routine physician services now constituting a much smaller proportion of total Medicare MHSP expenditures. In 1990, 34 percent of the total Medicare MHSP expenditure was for pharmacy services, 28 percent was for dental services and dentures, 22 percent was for other ancillary services, and 15 percent was for routine physician services.

3. Each year, approximately 39 percent of all Medicare MHSP patients use the MHSP clinics for ancillary services only--primarily dental care, dentures, and optometry services. Most of these beneficiaries are obtaining physician services from non-MHSP providers, and most have no current or prior relationship with MHSP physicians. In 1989, such beneficiaries accounted for nearly 19 percent of the total costs of the demonstration to Medicare.

4. Determining the effects of the MHSP demonstration on service use and Medicare costs is difficult because the demonstration has been operational for over 10 years and is not based on a randomized, experimental design. Our best estimates are that in 1989 the demonstration increased Medicare expenditures by $440 per beneficiary among MHSP patients who used MHSP physician services and by $500 per beneficiary among those who used the MHSP for ancillary services only.

5. A review of medical records obtained from MHSP clinics found one or more quality of care problems in 37 percent of the cases reviewed. However, no major problems were found which had observable, significant adverse effects on patients. A significantly higher rate of quality of care problems was found among MHSP patients than among a sample of Medicare HMO enrollees reviewed using the same criteria.

The finding that significant numbers of Medicare beneficiaries are using MHSP clinics for such ancillary services as dental care while obtaining physician services elsewhere suggests that the MHSP demonstration may not be targeted effectively to low-income beneficiaries who cannot afford primary medical care or who do not have access to such care.

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